

TWENTY-EIGHTH EDITION—Revised and Illustrated.

TWO SHILLINGS; OR CLOTH BOUND, THREE SHILLINGS.

THE PAINTERS' & GRAINERS' HANDBOOK.

A COMPLETE
ILLUSTRATED
GUIDE TO
PAINTING, GRAINING,
Distemperring,
SIGN-WRITING,
GILDING,

AND
GLASS EMBOSSING,

With Instructions for Using the

Patent Graining Rollers,

ALSO

SPECIMENS OF ALPHABETS,

*With numerous useful Receipts for
Painters and Decorators.*

EDITED AND COMPILED BY
JAMES CALLINGHAM.

London:

BRODIE & MIDDLETON,
79, LONG ACRE;

SIMPKIN, MARSHALL & Co.,
STATIONERS' HALL COURT.

ENTERED AT STATIONERS' HALL.



THE PAINTERS' & GRAINERS' HANDBOOK.

A COMPLETE
ILLUSTRATED
GUIDE TO
PAINTING, GRAINING,
Distemperring,
SIGN-WRITING,
GILDING,

AND
GLASS EMBOSSING,

With Instructions for Using the
Patent Graining Rollers,

ALSO
SPECIMENS OF ALPHABETS

*With numerous useful Receipts for
Painters and Decorators.*

EDITED AND COMPILED BY
JAMES CALLINGHAM.

London:
BRODIE & MIDDLETON,
79, LONG ACRE;
SIMPKIN, MARSHALL & Co.,
STATIONERS' HALL COURT.



P R E F A C E .

THE object of the following pages is to afford instruction in those important branches of the Painter's art, which, commencing with common House Painting, range between that and the more refined industrial arts of Graining, Sign Writing, and Gilding.

It is intended for the use of both Masters and Amateurs. The practised House Painter, for instance, may be considered as an amateur in the art of Graining; similarly, an accomplished Grainer may be a novice at Sign Writing; and *vice versa*. Hence, by bringing the prominent branches of Decorative Painting under one view, the whole being, it is hoped, lucidly explained, this little work cannot fail to be of immense utility to the practical workman, in placing before him the *modus operandi* of the various branches, which are, to a certain extent, foreign to his usual avocations, but with which it is nevertheless desirable he should have some acquaintance.

This is, it is believed, the first time the comprehensive subjects of which this work treats have been brought together in a single volume, a fact that will undoubtedly ensure for it a large measure of success.

The instruction it affords is perfectly trustworthy being based upon the practical experience of the most skilled artisans in the several departments of decoration.

By far the greater part has been written specially for these pages ; but, in order to render the work complete, the writings of others have not been overlooked, and in a few instances their opinions are cited. The chapters on "Sign Writing," "Gilding," and "Glass Embossing" are remodelled and condensed from the Author's larger work on "Sign Writing and Glass Embossing," published in 1871.

With these few prefatory observations, this little work—a complete *vade mecum* of the Painter's art—is confidently launched on the wide ocean of practical literature.

J. C.

LONDON, 1873.

INDEX.

PAINTING:—

	Page.		Page.
Introductory	9	Method of Procedure	15
Materials required	10	Flatting Large Surfaces	15
White Lead	10	Stippling Brushes	16
The Priming	11	To Lay on the Colours	18
Stopping	12	Paint and Varnish Brushes	18
Painters' and Glaziers' Knives	12	Specimens of ditto	19
The Second Coat	12	Repainting Old Work	22
The Third Coat	12	Apparatus for Burning off old Paint	23
Specimens of Knives	13		
Flatting	14		

On the separate Colours:—

	Page.		Page.
White Lead	24	Prussian Blue	33
Flake White	26	Intense Blue, Cobalt, &c.	34
Zinc White	26	Chrome Yellow	34
Vegetable Black	26	Yellow Ochre	34
Lamp Black	27	Oxford Ochre	35
Ivory Black	27	Raw Sienna	35
Vermilion	28	Burnt Sienna	35
Indian Red	30	Burnt Umber	35
Purple Brown	31	Raw Umber	35
Lake	31	Vandyke Brown	35
Carmine	32	Emerald Green	36
Rose Madder	32	Brunswick Green	36
French Ultramarine	33	Bronze Green	36

On Mixing different Colours:—

	Page.		Page.
Common Flesh Colour	37	Salmon	39
Fine Flesh Colour	37	Peach Blossom	39
Cream Colour	37	Lead, Dark Lead	39
Pearl Grey	37	Chocolate	39
Fawn Colour	37	Light Yellow	40
Buff, Straw, Drab, &c.	38	Stone Colour	40
Purple, Violet, &c.	38	Olive Green, Grass Green	40
French Grey, Silver	39	Carnation	40
Dark Chestnut	39	Imitation of Gold	40

Useful Receipts :—

	Page.		Page.
Varnish Green, for Venetian		To Kill Smoke on Walls	43
Blinds	41	To Remove Paint and Oil	
Varnish for Painting on Glass	41	from Boards	43
Painting Magic Lantern Slides	41	For Cleaning Oil Paintings, &c.	43
To Paint in Imitation of		New Method of Cleaning	
Ground Glass	42	Pictures	44
To Imitate Frosted Glass	42	To Make Knotting	45

DISTEMPERING :—

	Page.		Page.
Preliminary Remarks	46	To Stop the Suction of the	
Preparatory Processes	48	Walls	49
Mixing the Distemper	48		

Mixing Colours in Distemper :—

	Page.		Page.
To make Size	50	Drab, Salmon	52
Pink	50	Method of Laying on the	
Lilac	51	Colours	52
Light Grey, French Grey	51	Discolourations and Stains	53
Orange, Buff	51		

GRAINING AND MARBLING :—

	Page.
Preliminary Remarks	54
Mr. Ruskin on Imitations	55
The Grainer Defended	57

Graining Grounds :—

	Page.		Page.
Light Wainscot Oak	59	Mahogany Grounds	59
A Darker ditto	59	Rosewood Grounds	60
Dark Oak	59	Bird's-eye Maple	60
Very-Dark ditto	59	Satin Wood	61

The Methods of Imitating different Woods :—

	Page.		Page.
Oak, in Spirit Colour	61	Overgraining Brushes	66
To Mix Spirit Graining Colour	62	Another method of Veining	69
Graining Combs	62	Oak in Oil Colour	70
Combing-in	63	Mixing the Colour	70
Veining	63	Taking out Lights, or Veining	72
Veining Fitches	64	Another Oil Colour for Oak	74
Overgraining	65	To Imitate Oak in Distemper	79

The Methods of Imitating different Woods:—

(CONTINUED.)

	Page.		Page.
Another Oak in Distemper	80	Satin Wood	86
Pollard Oak in Distemper	81	Mahogany	87
Pollard Oak in Oil	81	Rosewood	88
Bird's-eye Maple	82	Yew Tree	88
Another Maple	86	Hair Wood	88
Maple in Oil, for outside work	86	Hair Wood for Chairs	89

Mechanical Aids to Graining:—

	Page.		Page.
Patent Graining Tools	90	Overcoming Rollers	93
The Graining Rollers	90	Graining Colours for use with Rollers	96
Repetition of Pattern	91		
Rollers for imitating Mahogany, Satin Wood, and Maple	92		

The Methods of Imitating different Marbles:—

	Page.		Page.
Oriental Verdantique	98	Sienna	103
Verdantique	99	Dove	104
Jasper	100	Blue and Gold	105
Porphry	101	Italian	105
Granite	102	Black and White	106
Black and Gold	103		

SIGN WRITING:—

	Page.		Page.
Preliminary Remarks	107	Common Styles of Colouring	121
Snapping the Chalk Lines	108	Letters on a Black Ground	121
Writer's Pipe-clay, or Crayon	108	„ „ Indian Red	121
Curved Writing	110	Importance of a Gilt Edging	122
Setting Out the Letters	110	Letters in Colour and Gilt	122
On Ornamental Writing	111	Shaded and Softened Thick- nesses	123
Extravagant Use of Ornament	112	The Shadow	124
Harmony of Style	112	Intense Purple	124
Hints on Colouring	113	Suitable Grounds for Gold Leaf	125
Primaries, Secondaries, and Tertiaries	114	Writing on Marbled and Grained Grounds	126
Tint, Shade, and Hue	114	Specimens of Alphabets	127
Method of Practice	116	Japanned Box for Writers, Decorators, &c.	131
Writing Pencils	117	Writer's and Decorator's Candlestick	132
Light Letters on a Dark Ground	120		
Vermilion Letters	120		
Vegetable Black, Purple Brown, &c.	120		

GILDING :—

	Page.		Page.
Gold Leaf	133	The Cushion, Cutting Knife, and Tip	137
Drying the Gold Leaf	134	Method of Practice	139
Colours of Gold Leaf	134	Gilding in the open air	140
Extreme thinness of Gold Leaf	135	Gilding by means of waxed paper	140
Early Substitutes for Gold Leaf	135	Pouncing	142
Double Gilt	136	Mordants used for Gilding	143
Inferior Metals used as sub- stitutes for Gold Leaf	136		

Burnished Gilding on Glass :—

	Page.		Page.
To make the Gilding Size	144	Transferring the Design to the Glass	148
Setting out the Design	145	Cleaning off the Rough Edges Softened Thicknesses on Glass	149
Method of Gilding	145		
Second Coat of Gold Leaf	146		
Burnishing the Gilding	147		

GLASS EMBOSSING :—

	Page.		Page.
Preliminary Observations	150	Removing the Brunswick Black	156
Early Glass Embossing	151	Grinding or Obscuring the Glass	156
Hydrofluoric Acid, and method of using it	152	Another Method of Figuring Glass	158
The Pattern on the Glass	152	Embossing Coloured Glass	158
The Embosser's Arm Rest	153	Gilding Embossed Glass	160
Brunswick Black	154		
Biting-in the Pattern	155		

PAINTING.

THERE are very few persons who have not, at some time or other, had a desire to do what they describe as “a bit of plain painting.” A door, a window, or some article of furniture, has reached a stage of shabbiness that cannot longer be endured, and the nearest colour-shop has been sought for the required paint with which to put a new face on the old article. But the mechanical application of the colour, it may safely be inferred, has not at all times been satisfactorily accomplished, even in the judgment of the amateur—and how far short of what a practised hand would regard as satisfactory, or indeed passable, may readily be conjectured.

The object of the following pages is to explain the practice of house-painting, or, more correctly, of plain painting, in a manner that the merest novice in the art may readily understand. Of course it is impossible for any person to become a proficient painter without considerable practice; and it would be folly to suppose that any rules or methods of working, however lucidly explained, would of themselves conduce to proficiency. In this, as in other things, practice is absolutely necessary to ensure anything like perfection. A few hints, however, will serve to clear the way, and remove obstacles which invariably beset the path of the beginner, and retard his progress in the attainment of that object which it is assumed he is at present, aided by this little work, in pursuit of.

The art of painting, in a country like Great Britain, is of the utmost importance, conducing as it unquestionably does to the comfort and durability of our dwelling-houses and their contents, by preserving them from the effects of a changeable climate and humid atmosphere. As regards the interior walls of apartments, it is the custom in this country to finish them in plaster, one of the properties of which is its power of absorbing moisture. It therefore happens that, when a room is left for any length of time without the benefit of a fire, or heated air supplied by other means, the plaster will continue to absorb a portion of the humidity with which the atmosphere is generally loaded, and this absorption will not only render the apartment unwholesome, but will tend to impair the durability of the plaster itself. Here, however, the art of the painter steps in, and, by successive applications of paint, renders the interior walls impervious to the effects of our changeable climate. In the first place, the paint, used as described in the following pages, hardens the surface of the plaster, forming, as Mr. D. R. Hay, an excellent authority, has pointed out, "a compact and smooth incrustation, upon which the dampness of the atmosphere can only condense when any sudden change takes place in the temperature."

The principal materials employed in plain painting are White Lead, Vegetable Black, Ivory Black, Venetian Red, Indian Red, Burnt Sienna, Raw Sienna, French Ultramarine, Vermilion, Chrome Yellow, Yellow Ochre, Oxford Ochre, Purple Brown, Emerald Green or Royal Green, Bronze Green, Burnt Umber, Brunswick Green, and occasionally other pigments; and Linseed Oil, Boiled Oil, Turpentine, Gold Size, Patent Dryers, Knotting, &c.

The most important of the foregoing pigments is white lead, which, besides being extensively employed with most of the other colours for the finishing coats,

is used very freely in the preliminary coatings, to stop the absorption of the plaster or wood, as the case may be. It is, therefore, essentially necessary that the white lead should be of the best quality, if durability and purity of tone are objects to be aimed at, as they almost invariably are. But, unfortunately, of all the painter's pigments, this is undoubtedly the most variable, both in quality and price. It is often extensively adulterated, either with whiting or sulphate of baryta. It is sold at the colour-shops ground, in linseed oil, to the consistency of a thick paste, and, when required for use, it is thinned down to the proper consistency with linseed oil and turpentine, a small portion of patent dryers (which can be procured ground in the same way as the white lead) being added, to give it the necessary drying properties.

The first painting, which is called the "priming," is generally done with a mixture of white lead and red lead, irrespective of the colour to be used for the finishing. These pigments are usually diluted with boiled and linseed oil, with a small quantity of turpentine, and it will be found that the priming, mixed in this way, will sink into the work painted, and dry flat, or dead. The object of the priming is to stop the absorption. If it is intended to finish with a dark colour, the first coat, or priming, is often made of lead-colour, by mixing together vegetable black and white lead, in about equal proportions, and this has the double recommendation of cheapness and durability, and forms a good groundwork for receiving the finishing colour, whether it be a dark green, a brown, dark red, or black. For outdoor work boiled oil is generally preferred to linseed oil, which is used for inside work. It is not advisable to add more than about one part of turpentine to three of oil for the "priming" and second coats, but a larger proportion is necessary for the finishing colours.

On new wood or plaster, four or five coats of colour

are necessary, dependent, of course, upon the absorbent nature of the material to be painted. After the priming is thoroughly dry, the work should be gently rubbed with a piece of fine glass-paper; and then all the nail-holes, bad joints, indentations, or faulty places of any kind, should be stopped with putty or white lead, or a combination of both, called "hard stopping," and applied with a "stopping-knife," made for the purpose. It may here be mentioned incidentally that there are various kinds of knives used by painters and glaziers, illustrations of which are appended. Nos. 1, 2, 3, 4, 5, and 6 are for "stopping" and glazing; No. 7 is for hacking out the old putty when a window has to be reglazed, and is called a "hacking knife"; whilst No. 8 is a sort of large palette knife, used for rubbing up and scraping the colours on a stone when they are being ground. It is called a "stone-knife."

Returning to the more immediate subject in hand, it may be remarked that if exigencies of time permit, the second coat of colour should not be applied for a couple or three days after the stopping has been effected, by which time a "skin" will have formed on its surface, and it will have become hard. The dusting-brush should be freely used, to remove the dust occasioned by the application of the glass-paper. For the second coat the priming colour may be again used. When this is dry, it will be found that in some places the surface of the work is glossy and in others dead, showing that the process of stopping the absorption has commenced. When this coat is thoroughly dry, glass-paper should be again rubbed gently over the work, care being taken not to scratch it, and then, the particles having been dusted off, the third coat may be applied.

In the third painting regard should be had to the finishing colour. If, for instance, a dark green, Indian red, dark blue, or black, be required, a lead-colour



1



2



3



4



5



6



7



8

(mixed as already described) should be used, but it should be diluted with about equal proportions of oil and turpentine, instead of by a preponderating quantity of oil, as in the preliminary coats. If, on the contrary, it is intended to have a light, or pale, finishing colour, instead of using lead-colour for the third coat, pure white lead, slightly tinted with an admixture of the finishing colour, should be substituted. When the third coat is dry, the painting ought to present a tolerably uniform surface, as regards gloss. Should it not do so, and certain parts still show that the colour has sunk in, the absorption of the wood or plaster has not been effectually overcome, and it will be necessary to go over the work again with the same colour, in order to ensure that the last, or finishing coat may not present any such inequality.

Some painters make a practice of putting on two coats of the finishing colour, and this is unquestionably advantageous in securing uniformity; but if the colour is an expensive one, the workman, from prudential reasons, cannot exercise his choice in the matter. There are, however certain common colours, which approach in some degree the very richest, and these should be judiciously selected and applied as the grounds which are to receive the finishing colour.

If it is intended to finish with "flatting," the fourth coat should be as thick (technically called "round" as it can well be used, but not so thick as to look streaky and show the marks of the brush. It should be diluted with equal parts of linseed oil and turpentine. The colour of it ought to be a trifle darker than that which is intended for the finishing coat. Great care should be taken to lay on all the coats with smoothness and equality, and to lightly rub each of them with glass-paper before the application of the other. The "flatting," as it is called, from its drying without any gloss, is composed of pure white lead,

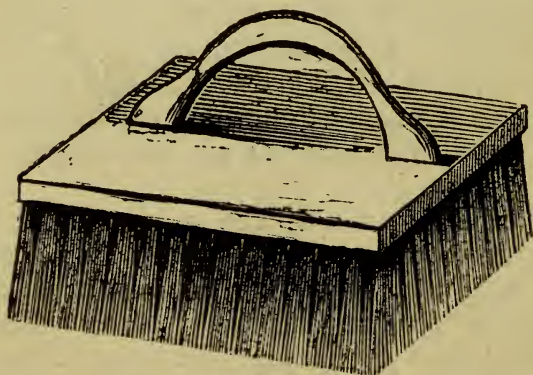
diluted entirely with turpentine, and tinted, of course, to the required colour. It should appear, when mixed, a few degrees lighter than the tint required, as it darkens somewhat in the drying. Some painters use japaner's gold size instead of the patent dryers, to give the "flatting" the necessary drying properties, and this undoubtedly has its advantages, though it is not indispensable. This coat must be applied with great care and despatch, as the turpentine evaporates very rapidly; and if re-touched with the brush after that takes place, which is in little more than a few minutes after its application, an indelibly glossy mark will be the result, and the uniformity of the work will be destroyed. It is of the utmost importance, also, that no portion of the ground be left uncovered by the flatting, or, when the work is dry, the part omitted will be shiny, and will present a very unsatisfactory appearance. The coat immediately before the flatting coat ought to stand two days before the flatting is applied, but not for a longer period, because much of the beauty and solidity of the work will depend on the latter drying into and uniting with the former. If the last coat of oil-paint remains to get hard, the flatting will appear crude and streaky.

The proper method of flatting a door is, to begin and finish the panels, taking care to cut them in clean; then to proceed with the styles, working the colour quick, in order to keep it from setting before the door is finished; and if the flatting should set on any part of the work, it must be rubbed up with fresh colour, otherwise it will not have an uniform appearance.

Before leaving this branch of the subject, a few words are necessary to put the young painter in possession of all he will require to know ere he will be able, with assistance, to flat a large surface satisfactorily. We say "with assistance," because, if the wall that is being painted is eight or ten feet high, it

will require two men to flat it, as the colour sets so rapidly. A plank must be fixed from one end of the wall to the other, about half the height of the wall, and on this one workman must take his stand, the other being on the floor. The bottom workman must commence first, painting not more than twelve or eighteen inches wide at one time. He must move the brush in a perpendicular direction, and, when he has painted as high as he can conveniently reach, he should carefully cross the work with a light hand, in order to give the colour an uniform extension. When this is done, the work should be laid off very lightly, beginning at the bottom and striking the brush up about a foot; then, from the top, lightly drawing the brush to the bottom. Following immediately, the man on the plank must begin where the other left off, and, carrying the colour upwards, finish at the top. In the mean time the man on the floor must commence another width, and so proceed till one side of the wall is finished. There must be no break or rest during the painting of any large surface, or the joinings will appear glossy, and the solidity and uniformity of the work will be sacrificed.

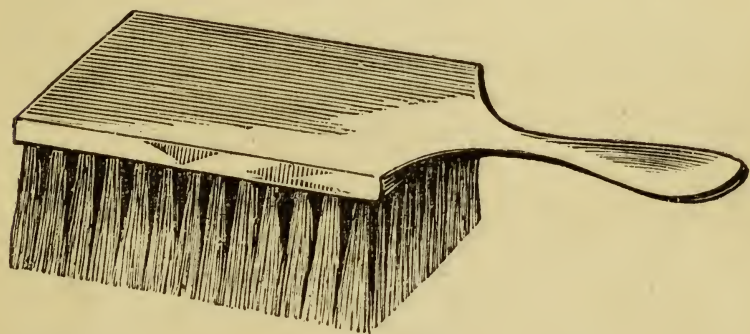
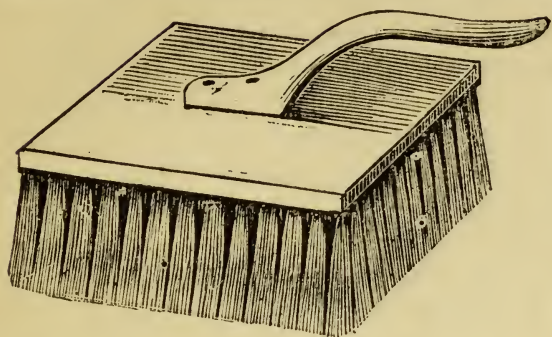
Of late years a set of brushes of various patterns, and known as "stiplers," have been introduced for



the purpose of removing any brush marks which might be apparent. The stippler, having a perfectly flat and regular surface of hair, is gently dabbed against the

paint whilst it is wet, by which means a smooth

surface is obtained, although the *pointillé* is not sufficiently apparent to render the work rough or of a surface resembling glass-paper. The accompanying woodcuts will give a good idea of the stippler, and of the uses to which it may be applied.

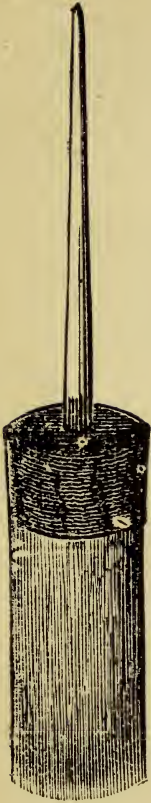


In laying on the ground colours the beginner is apt to think that, by using a large quantity of paint, he will, with less trouble to himself, be able to dispense with at least one or two coats. But this is quite a mistaken notion. It is impossible to execute good work if the colours are used too thick, or applied too plentifully. In the one case the brush-marks will obtrude themselves, and in the other the paint will shrivel up and dry rough, or, technically speaking, it will "cry," and perhaps run down in streaks—the common joke amongst painters, in such a case, being to advise the inexperienced limner to get some tin-tacks, with which to tack the paint on!

It should be stated that, in laying on the colour, either on panels, stiles, or other flat work, the brush should be crossed backwards, and forwards, and in all directions, to equalise the quantity of paint on every part of the work. It must then be laid off lightly, beginning at the top, and drawing the brush firmly down, and then from the bottom, upwards, to meet and make the joining good. Care should be taken not to leave any streaky brush-marks on the work, nor any "puddles," or "fat" edges on the corners or in the crevices of mouldings, carved work, or elsewhere.

When the painter has done for the day, the paint-pots must be wiped round the inside with the brush, and the superfluous colour thus removed from the pots should be scraped off the brush back into the pots with a palette-knife. The brushes must be immersed in water; and when the remaining colour has to be left for several days, it also should be covered with water, which can be poured off when the colour is again required for use.

As the amateur may not be familiar with the different kinds of brushes in use amongst painters, it has been thought advisable to give illustrations of those principally employed, with their trade names, so that a selection can readily be made. The larger kind of paint brushes are known by three different sizes—namely, as four O's, six O's, and eight O's—the latter being the largest. These are made both round and oval, and are bound either in copper wire or string. The oval-shaped brushes are now much in vogue, and no doubt are to be preferred to the old-fashioned round ones, inasmuch as they require less working to get them into a suitable shape for spreading the colour evenly. The brushes here referred to are shown by the following cuts, No. 1 being the ordinary round brush, and No. 2 the more modern oval-shaped. The former is string-bound, and the



1



2



2A

latter copper. The smaller kinds of brushes are called "sash-tools," and vary in size from No. 1 to No. 12. The illustrations below represent a sash-tool

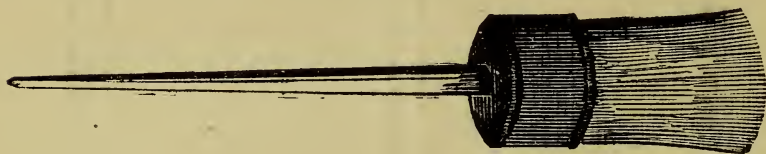


3

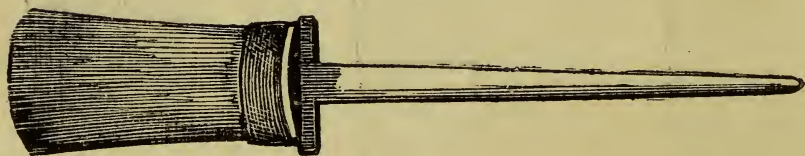


4

bound in tin and in string respectively. Varnish brushes are somewhat similar in shapes to the foregoing, but are made of finer hog-hair than brushes used for painting. The subjoined represents an oval tin-bound varnish brush and oval copper-wire-bound



5



5A

varnish brush. There are also round string-bound varnish brushes, of which a diagram is appended :—



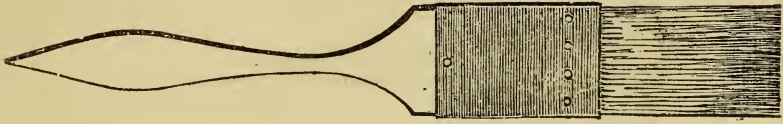
6

Varnish tools, the different sizes being indicated by numbers ranging from 1 to 12, are also made; and



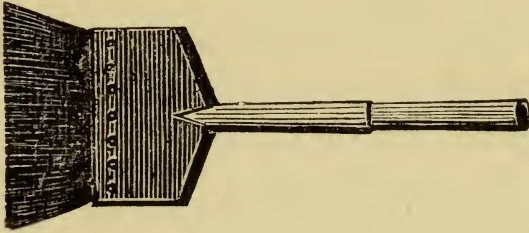
A

recently a pinned varnish brush, flat, suitable for pictures and fine work, has been introduced. An illustration is subjoined :—



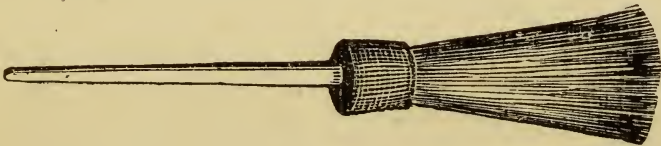
7

The following cut represents another kind of varnish brush for pictures. Then there are other kinds of



8

hog-hair brushes for different purposes, one of which, at any rate, is indispensable to the painter, and that is the dusting brush, for removing dust from the work previous to the application of paint. It varies from the ordinary painting brush, in that the hair spreads at the end, as shown in the annexed engraving :—



9

The next specimen is a tar brush, for tarring rough wood-work, &c. :—



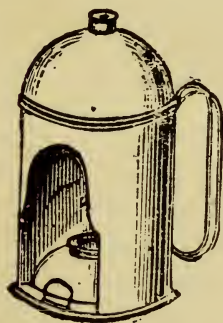
10

There are various other kinds of brushes used in painting, which will be explained and illustrated under the different branches of our subject, as the present work advances.

To repaint old work it is not necessary to give it more than two or three coats of colour. If the work be very dirty, it should be washed with soap and water, rubbed down with pumice-stone and water, then left to dry, and, when dry, it should be well dusted. If very foul with smoke and grease, as is often the case in kitchens, passages, the tops of mantel-pieces, &c., the work should be lime-washed, to kill the smoke and grease, because the paint will never dry if laid upon a smoky or greasy surface. A coat of weak size is sometimes washed over the smoky parts, and it has the effect secured by the lime-wash, inasmuch as it enables the colour placed over it to dry, but it has the disadvantage of peeling off after a time, and in this respect it ought never to be used. If there are any blisters, they should be scraped off, and the places touched with colour, and left to dry, before the painting is proceeded with; in fact, all the places from which the paint has been chipped or worn off should be touched up in the same way. When these patches are covered with a sufficient body of paint, the whole surface of the work may be

painted. When this coat of colour is perfectly dry, which it will be in a day or two, all holes and bad joints must be stopped with putty and left for a day to harden. The work should then be rubbed down with glass-paper, thoroughly dusted, and the next coat applied.

When the incrustations of paint on old work have become very thick by successive paintings, it is advisable to remove the old colour entirely. There are different methods of effecting this, a patented substance resembling lime having for some time been used to burn off the thick colour. But perhaps the best method is absolutely to burn it off by means of the French Patent Self-Acting Blowing Apparatus, which is an extremely ingenious contrivance. It is a



kind of spirit lamp, and has a jet of a peculiar structure, by which the flame is so spread and flattened out that the heat is dispersed over a large surface. As soon as the colour has been softened by the heat, it only needs to be scraped off with a knife, such as No. 6, given in a preceding page. The work will require repainting, as for new wood. Care should of course

be taken not to burn the wood from which the paint is being removed. The subjoined diagram represents the blowing apparatus.

Having thus indicated in a general way the method of painting adopted by the most experienced hands, it is necessary to a full understanding of the matter that we should go into more detailed particulars, regarding the separate colours and the method of mixing them. It may be premised, however, that there is no "royal road" to the art of mixing colours. A great deal depends upon the judgment, and often the crotchet, of the workman. A method that one

would discard would be readily adopted by another ; and it must be confessed that, amongst no class of skilled workmen are there greater discrepancies, as regards particular methods of working, than amongst house painters, who cling to certain favourite theories of their own with a pertinacity that, in a better cause, would be highly commendable.

The facts and instructions which follow are given as the result of practical experience, and may be safely accredited ; and, moreover, they will be acknowledged, by any unbiassed person capable of giving an opinion, to be free from individual idiosyncrasy.

ON THE SEPARATE COLOURS.

WHITE LEAD.

This is the principal ingredient in all ordinary colours used in house-painting ; indeed, it generally constitutes nine-tenths of the composition, and consequently forms the main body of the paint. The quality of this article is therefore of the greatest importance, as upon it depends almost entirely the durability of the work ; yet, of all the painter's materials, it is the most difficult to get free of adulteration. The painter buys it ground in oil, to the consistency of a thick paste, which operation is performed by machinery on the premises of the manufacturer, instead of being done by a clumsy hand-mill, as formerly, in the painter's shop. It improves by keeping, old white lead possessing greater body, or covering capacity, than that newly manufactured. The cheapest quality is decidedly the most expensive in the end, and should never form any part of a painter's stock. White lead was formerly greatly adulterated by the introduction of fine whiting, but

now by a cheap mineral called "byrates," and, as detection is very difficult, the temptation to adulterate, on the part of the manufacturers, is proportionally great. But how much greater must it be to the needy tradesman, who can employ whiting instead of white lead in the first two coats of his work, with scarcely a possibility of his employers knowing anything of the matter. The injury done to paint by the admixture of whiting or byrates is, that it not only renders it of a much less compact body, but, causing it to be more easily acted upon by the atmosphere, it is more liable to be blached and destroyed by repeated washings.

To mix the white lead, it should be placed in a can or pot, and, an admixture of oil and turpentine being at hand, a small quantity should be poured over the white lead, and the whole stirred about, with a stiff palette-knife or a stopping-knife, till the diluent has become thoroughly incorporated with the white lead.

The mixture may now be stained to the required tint. For this purpose the staining colour should be ground in oil, and added cautiously to the diluted white lead, some colours staining much more powerfully than others. The staining colour should never be added in a powdered or dry state.

Add also patent dryers, in the proportion of about half an ounce to a pound of colour, and, after it has been well stirred in, the whole should be passed through a finely perforated tin strainer, made for the purpose, and obtainable at the colour-shops; or a piece of canvas will answer the purpose equally well, and is preferred by some painters.

It may here be stated, once for all, to avoid its frequent repetition, that all colours mixed with oil and turpentine require the addition of dryers, to give the paint the necessary drying properties. Formerly the painter was obliged to purchase litharge and sugar of lead, or burnt white vitriol, in a dry state,

and grind them in oil to the consistency of a thick paste, to harden the paint; but the patent dryers answer every purpose and save a great deal of labour.

FLAKE WHITE

Ranks next in body, or density, to white lead, and is employed for highly-finished work, in which a pure white is needful. It is generally used for the finishing coat, white lead being almost always used for the first paintings, because, owing to the greater body it possesses, it covers more effectually.

ZINC WHITE

Has been added to the list of pigments within the last few years, and is considered to be more durable than white lead or flake white. It is extremely pure, but has the disadvantage of possessing little body, or covering power. Hence it is not held in such esteem by the painter as it is by the artist, to whom this is no great detriment, because he can plaster on his colour as thickly as he pleases, whereas the painter is necessarily limited to a few thin layers, or coats.

For all ordinary purposes the best white lead will be found sufficient. It is only in very delicate and particular work that either flake white or zinc white need be had recourse to.

VEGETABLE BLACK.

This is the most pleasant working and the cheapest black at present in use. It is not quite so intense as ivory black, but possesses more friendly and agreeable qualities. The best way to procure it is to buy it in a dry state, in which it resembles soot, and is so exceedingly light that an ounce or two will fill a gallon measure. It is free from grit, and only requires

to be "rubbed up" with a palette-knife on a marble slab, instead of grinding. It should never be diluted with linseed oil,—because, if it were, it would never dry,—and it is not advisable to employ turpentine, but always the best boiled oil, and a little varnish will improve it. A small quantity of dryers should be added, to ensure its drying with a uniformity of surface.

LAMP BLACK.

This pigment, which was formerly extensively employed, has been almost superseded by vegetable black, which is superior to it in every respect.

IVORY BLACK,

Which is the purest and deepest of the blacks, is made in forms resembling "drops," and, for that reason, it is sometimes called "drop-black." It requires a good deal of careful grinding, being somewhat hard; and, unless it is ground very fine, it will spoil the work. Unlike the other black, it should be ground in turpentine, and diluted for use with turpentine, gold size, and a little varnish. In drying, it will become dull, and consequently it should never be used except when it has to be coated with varnish, which will bring it back to its original intensity. It is a somewhat difficult pigment to manage, and requires much careful handling. If it is thinned down with too much turpentine, it will not fasten itself upon the work, but will "rub up," as it is called, on the application of varnish, leaving the ground to show beneath, and this will irremediably spoil the work. Care should be taken, therefore, that a sufficient quantity of gold size and varnish be added, to bind it thoroughly and cause it to adhere firmly to the ground colour. If the black be required to dry very rapidly, gold size alone should be added to the

turpentine. Carriage painters, who always use quick-drying colours, put a small patch on their thumb-nail, to test whether enough gold size has been added to ensure its drying firmly. In about ten minutes the colour cannot be rubbed off the thumb-nail if it has a sufficient quantity of gold size to bind it; but if it has not, it will crumble off under the slightest friction. The reason is obvious: turpentine, being a volatile oil, has no binding property, and any colour diluted with turpentine alone will be as easily removed as if it were mixed with water, without the addition of size or glue to bind it. It is always advisable, therefore, to apply the carriage painter's test before any of the quick-drying colours be made use of.

It should be borne in mind that linseed oil must not enter into the composition of black paint, for the simple but sufficiently conclusive reason that, if it did, the black would never dry.

VERMILION.

There are many kinds of red manufactured for the use of the painter, those most commonly employed being vermilion, Indian red, red lead, lake, and rose madder. These vary very much, both in colour and in body. The red most in use for staining different colours is vermilion, which is intense and bright. There are several varieties of vermilion, or what is sold under that name, the prices of which range from about 3d. to 2s. per oz. Being a heavy pigment, it is somewhat expensive. For this reason the inferior qualities of vermilion, or rather its imitations, commonly called "mock" colours, are frequently employed. These mock colours, which are known in the trade as Derby reds, are exceedingly transitory. When, unmixed with white, they are exposed to the action of the sun's rays, they turn in a few months to a sort of dark purple-brown, and subsequently to a dull

black. On this account they should be avoided on all work of any importance. And, besides this disadvantage, these inferior vermilion do not mix or work well, having a tendency to mealiness, which prevents them from flowing freely from the brush.

The better kinds of vermilion are much more costly and far more brilliant than the imitations. Chinese vermilion is considered the best. It may be procured as a fine powder, done up in small paper packets, lettered in Chinese characters, each packet containing one ounce, and these are sold at 1s. each. Or it may be bought ground in oil, in the patent collapsible tubes, at from 1s. to 2s. per tube. Vermilion, being a very bright colour, readily throws into the shade any of the common colours sold under its name. There are two descriptions of the better class of this pigment, called respectively "crimson" and "scarlet." Of the two the crimson is the more durable. But these different vermilions are none of them very much to be recommended on the ground of permanency. When exposed to the sun, even the best will lose its brilliancy after a few months; and though this deterioration may be arrested for a time by a coating of clear durable varnish, it will be certain to become dark in the long run. This is to be regretted, as vermilion is the only really intense bright red that possesses any body in itself. Notwithstanding this fugitive quality, however, it is a colour which is greatly prized by the painter, and one which he could not well dispense with. Sometimes, in outside work, it is so exposed to the direct rays of the sun that there cannot be any reasonable probability of its retaining its original colour but for a very short time. When used in such instances it is no doubt "to order," and it is hardly the province of the painter to object on the ground that it "will not stand," as the expression is; for the less durable the colour, the sooner will his services again be in requisition. But it seems something like

waste of labour to use it, as it often is used, on outside work, exposed to the full action of the weather. The beginner is pretty sure to be tempted into a lavish employment of it; but if he watches the after-effect, he will soon discover that its avoidance, as far as possible, on work that is intended to be at all permanent, is desirable, unless he can afford to employ a very superior quality.

On some grounds vermilion will not cover with only one coat, and the work has to be gone over a second time. When two coats are necessary, good vermilion should be used in both instances.

Vermilion, in a state of powder, may be tested by placing a dust of it on a piece of clean white paper, and crushing it with the thumb-nail. If pure, it will not change its colour by any amount of rubbing; but if adulterated, it will become a deep chrome yellow, or assume the appearance of red lead, with which article it is mixed in order to cheapen it. This accounts for the unstable quality of the inferior kinds of vermilion.

When vermilion is largely diluted with white, and used as a light tint, it is permanent, and is most invaluable for inside painting. Its importance in mixing to form different tints will be hereafter referred to.

INDIAN RED.

This is a serviceable colour, working very agreeably, and possessing great body, one coat being sufficient to hide any ground-colour over which it may be laid. It is of a deep purple cast, and is darker in tone and less brilliant than vermilion. As a ground colour it is in great repute. It will stand for a long time, retaining its colour to the last. When used as a ground it should be mixed with boiled oil, with a small quantity of dryers; or it may be mixed with turpentine, with a little gold size or varnish to bind

it. For this purpose one part of gold size or varnish to four parts of turpentine will be about the quantity necessary. When mixed in this way it dries very rapidly. It should be laid on without much teasing or working about, care being taken that no part of the space to be covered is missed, because any attempt to retouch after the colour is dry will show itself. The colour mixed in this way will dry dead or flat, and should be varnished. Of course, if the Indian red be mixed with boiled oil, it will be longer in drying, and when dry it will appear glossy, so that it will not necessarily require varnishing; but of course it will be more durable and uniform if it be varnished. It may here be observed that varnish stands out better—that is, appears brighter—on a dead or flat colour than upon a bright or glossy one. This applies not merely to Indian red, but to all colours. Hence it is that coach-painters invariably mix their colours with turpentine and gold size.

PURPLE BROWN

Is another reddish colour, deeper in tone and not quite so pure as Indian red, but it is very useful for outdoor work. It should be mixed in the same manner as the preceding. It may easily be imitated by a mixture of vermilion and vegetable black; but of course this is not at all a commendable operation, the purple brown being much cheaper than a mixture of vermilion and black. It can be bought at a cheap rate in a dry state, and it is not difficult to grind; or it can be procured already ground in oil.

Neither purple brown nor Indian red should be diluted with linseed oil. In fact, what was stated regarding the diluents of vegetable black applies as regards these colours.

LAKE.

Crimson and scarlet lake are rich transparent

colours, but are seldom used in house-painting, except when mixed with white, when they give pure carnation tints of great beauty. The lakes are not to be commended on the ground of permanency.

CARMINE

Is another exceedingly charming red, very much of the same nature as lake, but it is too costly to be used in common painting. Owing to its great brilliancy it is much prized by flower-painters, to whom it is indispensable. Unfortunately it is not to be depended upon for durability.

ROSE MADDER.

Rose Madder is entitled to consideration, because, besides possessing all the commendable qualities which distinguish the lakes, it is quite permanent. It is, therefore, commonly employed in preference to any other bright rich red, notwithstanding its greater cost. The lakes can be purchased, ground in oil, in small collapsible tubes at 5d. each, whilst a tube of rose madder of the same size costs 1s. These colours, however, are only used on the finest work, and generally in combination with, or superposed upon, some other colour. It should here be remarked that rose madder, or lake glazed over a white ground, has a far richer effect than when mixed up and used with white. But the beginner will find it preferable to adopt the latter method notwithstanding, inasmuch as he will fail at the outset to lay the transparent colour evenly over the surface to be covered. In order to effect this properly, much practice will be necessary. The best way to proceed is to thin the colour with varnish and a small quantity of turpentine, and then it will flow somewhat in drying. The pale ground upon which this transparent glaze is laid should be per-

fectly smooth, all brush-marks being removed by a gentle application of fine glass-paper, and the glaze should be laid on with a moderately large brush. By mixing the transparent colour with the white, and applying it as one tint, a great deal of its purity will be destroyed, though there will be less difficulty in the operation of laying it on; whilst, on the other hand, by glazing over a purely white and smooth ground, the purity of the colour will be retained, though there is a chance of failure in the difficulty of spreading the glaze evenly over the surface to be covered. A few trials in each of these methods of procedure will prove the correctness of these observations, and the young painter will soon discover the course which it is advisable for him to adopt.

There are several other reds in ordinary use, such as *Light Red*, *Red Lead*, and *Venetian Red*, but these are seldom used, except for grounding, or to receive some brighter colour. Red lead may be dispensed with altogether, except for priming, as it is not permanent.

FRENCH ULTRAMARINE.

The most serviceable blue for the painter is French ultramarine, which is a cheap and good substitute for the genuine article, the price of which places it beyond the reach of the painter. French ultramarine is a permanent, kindly working colour, and affords a variety of clear tints when mixed with white. It is a brilliant blue, and preserves its purity when reduced in tone by the addition of white. It may be deepened by Prussian blue or indigo, or by a trifling addition of vegetable black.

PRUSSIAN BLUE

Is another serviceable colour, but not so brilliant as

the preceding. It is useful for blue grounds, but, owing to its extreme depth, it requires the addition of white to bring out the colour. Used in its pure state, it has the appearance of a fine lustrous black, and a common black looks grey in contact with it. Prussian blue is a good working colour, and a good dryer. It should be sparingly mixed with other colours, as its intensity renders it dangerous and overpowering in its effects. A small piece the size of a pea would tinge two or three pounds of any light tint. Many painters mix a small quantity of vermilion with the blue, to neutralise a slightly greenish tendency which it possesses when used by itself.

The other blues are *Intense Blue*, which is very similar to French ultramarine ; *Antwerp Blue*, *Indigo*, something like Prussian blue, but not quite so bright ; *Cobalt*, a very brilliant colour ; and one or two other sorts of blue, which may be disregarded, the above being sufficient for every purpose.

CHROME YELLOW.

There are several kinds of chrome, but those most generally used are known as pale, medium, and deep, the former being almost a straw colour, and the latter approaching a deep orange. These colours, when mixed with white lead, are used as substitutes for gold. They are seldom required in a pure form. It is usual to procure chrome yellow in a dry state, and to rub it up on the marble slab with a palette-knife. previous to mixing it with other colours.

YELLOW OCHRE.

This is a very serviceable colour for mixing. It is indispensable for grounds for graining. It is usually used with white lead.

OXFORD OCHRE.

Somewhat deeper than the preceding, but a most useful earth for graining grounds. It is very permanent.

RAW SIENNA

Is another yellow much used for grounds for graining, and for mixing light tints. It is a clear and friendly working pigment, and is quite permanent.

BURNT SIENNA.

This is an invaluable colour for staining different grounds. It should be procured already ground, as, when in a dry state, it is so hard that it is next to impossible to grind it thoroughly by hand. It is quite transparent, and is indispensable to the grainer, who employs it extensively, ground both in oil and water.

BURNT UMBER.

Of all the browns used by the house-painter, burnt umber holds the foremost place. It is seldom used by itself, but in conjunction with white lead it is invaluable in giving stone-colour tints. It should be procured ground in oil.

RAW UMBER

Is another colour extensively employed in mixing different stone-colour tints.

VANDYKE BROWN.

This is a very valuable pigment, quite transparent. It is chiefly used by grainers.

EMERALD GREEN

Is the most vivid of the greens, and is a valuable colour to the painter. It is light in tone, and cannot be imitated by any mixture of yellow and blue. It should always be bought ground, and not in a dry state, because it is difficult to get the powder sufficiently incorporated with the diluents to work well. When used by itself, it will be necessary to go twice over the work, as it possesses but little body. If mixed with white, its opacity is increased, and one coat will generally be enough; but, of course its tint is lowered in proportion to the quantity of white used with it. It is a somewhat tardy dryer, and should therefore be forced with patent dryers. A common kind of this green is known as *Navy Green*, which is serviceable for outside work.

BRUNSWICK GREEN.

There are several shades of Brunswick green, each of which will be found of service for painting outside railings, &c., and being a cheap pigment it is extensively used.

BRONZE GREEN.

This is a dark but useful olive green, much used out of doors.

It should here be observed that the greens, like the blacks, must be mixed with boiled oil, or boiled oil and varnish, and not with linseed oil and turpentine.

There are many other colours used by the house-painter, but, for most practical purposes, those above enumerated will be found sufficient. But if any other colours should be hereafter mentioned in the course of the recipes which follow, it will be understood that they are mixed in the manner stated in the preceding pages, unless otherwise directed.

ON MIXING DIFFERENT COLOURS.

A few recipes are appended, by which the young painter will be enabled to mix any shade or tint that he may require. It should be added that, though these are, for the most part, culled from already published sources, care has been taken to select only those which are appropriate to the present methods of practice.

COMMON FLESH COLOUR.

Stain your white lead with light red, and add a small piece of yellow ochre.

FINE FLESH COLOUR

Is composed of white lead, lake, and vermillion, and Naples yellow or yellow ochre.

CREAM COLOUR.

This is a mixture of chrome yellow, the best Venetian red, and white lead.

PEARL GREY.

White lead with equal portions of Prussian blue and lampblack. The blue must be used very cautiously, as it is a powerful colour.

FAWN COLOUR.

Burnt sienna, ground very fine, mixed with white lead. Two or three pounds of this colour are sufficient to stain white lead for a large building. It is of a superior shade, and very excellent for inside work.

BUFF.

This is a mixture of pale chrome yellow and white lead, tinged with a little Venetian red.

STRAW.

A mixture of pale chrome yellow and white lead.

DRAB.

Raw or burnt umber and white lead, with a little Venetian red.

ANOTHER.

White lead with a little Prussian blue and yellow ochre.

ANOTHER.

White lead with a little yellow ochre and lamp-black.

ANOTHER.

White lead with a little chrome green.

PURPLE.

White lead, Prussian blue, and vermilion.

ANOTHER.

Prussian blue, vermilion, and rose madder or crimson lake.

VIOLET

Is composed of vermilion, French ultramarine, a small portion of black, and white lead.

FRENCH GREY.

White lead and Prussian blue, tinged with vermilion; and for the last coat, if cost is no object, substitute rose madder or lake for the vermilion.

SILVER.

Use white lead, indigo, and a small portion of black, as the shade may require.

DARK CHESTNUT.

Mix light red and black. Use red ochre when you require to lighten the colour.

SALMON.

White lead tinged with the best Venetian red.

PEACH BLOSSOM.

White lead tinged with orpiment.

LEAD.

This is a mixture of vegetable black and white lead.

DARK LEAD COLOUR, IN OIL.

Use white, black, and indigo.

CHOCOLATE.

Mix vegetable black and Venetian Red.

LIGHT YELLOW.

This is a mixture of lemon yellow and white lead.

ANOTHER.

Chrome yellow, white lead, and red lead.

PAINTING.

ANOTHER.

Raw sienna, mixed with white lead. If the colour is required of a warmer cast, add a little burnt sienna.

STONE COLOUR.

Yellow ochre, burnt umber, and white lead.

ANOTHER.

Raw sienna, burnt umber, and white lead.

ANOTHER.

White lead, burnt umber, yellow ochre, and a little Venetian red.

OLIVE GREEN.

Prussian blue, chrome yellow, and burnt umber.

ANOTHER.

Vegetable black, chrome yellow, and a small piece of burnt umber.

GRASS GREEN.

Several shades of grass green may be made by mixing Prussian blue and chrome yellow.

CARNATION.

A mixture of lake and white lead.

FAWN COLOUR.

White lead stone ochre, and vermilion.

IMITATION OF GOLD.

Mix white lead, chrome yellow, and burnt sienna, until the proper shade is obtained.

USEFUL RECIPES.

The following useful recipes will not be out of place in a work of this kind, which is intended chiefly for the amateur :—

VARNISH GREEN, FOR VENETIAN BLINDS, &c.

The work must first be painted once or twice with a light lead colour ; when hard, grind some dry white lead in spirit of turpentine ; afterwards take about one-third in bulk of verdigris, or navy green, which has been ground stiff in oil ; then mix them both together, and add a little common oak varnish, sufficient only to bind the colour. When this has been applied it will become hard in about fifteen minutes. Add more varnish to give a good gloss. Then go over the work a second time, and, if required, a third time. Thus you will have a beautiful green with a high polish. It possesses a very drying quality, enabling the work to be completed in a few hours. The tint may be varied according to taste, by substituting different greens ; and if a bright grass green is required, add a little Dutch pink to the mixture. This colour is best used warm, as it gives the varnish an uniform appearance.

VARNISH FOR PAINTING ON GLASS.

One ounce of clear resin ; melt it in an iron vessel ; when all is melted, let it cool a little, but not harden ; then add turpentine, sufficient to keep it in a liquid state. When cold, use it with colours ground in oil.

PAINTING MAGIC LANTERN SLIDES.

For painting magic lantern slides, water-colours are sometimes used, and boxes of transparent moist water-colours for this purpose are sold by Messrs. Brodie and Middleton of Long Acre. Outlines on glass, prepared for painting, may be procured in various

patterns ; also a varnish for fixing the water-colours to the glass, and a black varnish for filling in the background. The same firm have also introduced a number of transparent varnish colours, in patent collapsible tubes, for painting magic lantern slides. The colours being finely ground, and not requiring to be varnished, are in much repute.*

TO PAINT IN IMITATION OF GROUND GLASS.

Mix white lead in three-fourths of boiled oil and one-fourth of spirits of turpentine ; and to give the mixture a drying quality, add patent dryers. The colour must be made exceedingly thin, and put on the panes of glass with a large brush, in as even a manner as possible. When a number of the panes are thus painted, take a dry duster, quite new, dab the ends of the bristles on the glass in quick succession, till you give it a uniform appearance ; repeat this operation till the work becomes very soft, and it will then appear like ground glass. Or, the paint may be dabbed over lightly with a pad of cotton wool, covered with a piece of old linen or cotton rag, when the imitation will be very fine. When the windows require fresh painting, get the old coat off first by using strong pearlash water. This application requires but little labour.

ANOTHER METHOD.

Dab the panes regularly over with putty, and when dry, in two or three days' time, go over them again. The imitation will be excellent.

TO IMITATE FROSTED GLASS.

Who is there that has not, during cold winters, stopped to admire the beautifully symmetrical and

* For further information on this subject see "Transparent Painting on Glass, in Water, Oil, and Varnish Colours," published by Messrs. BRODIE & MIDDLETON, and SIMPKIN, MARSHALL & Co. Price 1s.

yet fantastic figures of leaves and flowers depicted on the window panes of a well heated room, the air of which is charged with aqueous particles? Epsom salts (sulphate of magnesia), dissolved in beer, and applied to a pane of glass with a sponge or brush, will, on crystallizing, produce the identical designs above alluded to ; so that the ephemeral productions of frost may thus be easily perpetuated.

This is a most serviceable and appropriate window decoration for summer-time, as its appearance, besides being light and delicate, is cool and refreshing. It can be easily scraped from the glass and renewed.

TO KILL SMOKE ON WALLS.

Walls, if almost black with smoke, must be rendered as clean as possible with a brush ; and, in order to kill the smoke, wash them over with strong pearlash or soda-water, and immediately rinse them with clear water before the pearlash is dry. When dry, give them a thin coat of fresh slacked lime, with a good proportion of alum dissolved in hot water and mixed with it. The work should be finished with whiting and size. Be careful not to apply the size distemper till the lime wash is dry, as the latter will destroy the strength of the size if the two come in contact while wet.

TO REMOVE PAINT AND OIL FROM BOARDS.

Mix together soap lees and fullers' earth ; rub it in and let it dry ; afterwards scour it with soft soap, sand and hot water.

FOR CLEANING OIL PAINTINGS, WAINSCOTING, OR FURNITURE.

Smash or grate into clean water raw potatoes, sufficient to form a thin paste, add fine powdered pumice-stone or fine sand, and with a sponge well clean the

work ; then finish with water and a cloth. When dry, polish or varnish may be applied.

NEW METHOD OF CLEANING PICTURES.

A simple, safe, and effectual means of cleaning paintings, on a new principle, has recently been discovered and adopted with success, by the use of a mixture called "Anadeiktine," for which Messrs. Brodie and Middleton are the sole agents. By means of this article any one can, with the utmost safety, divest a picture of every particle of dirt, varnish, or other foreign matter, without the possibility of injury, however delicate or rough and granulated the surface may be ; consequently, with this medium, the most valuable work of art may be safely operated on by a domestic of the meanest capacity, as by attending to the instructions, which are simple in the extreme, no injury can possibly occur. In giving directions for the application and use of this mixture, no precaution is necessary further than that it should be rubbed on thinly with a hog's-hair tool, left to dry for six or ten hours (more if convenient), and afterwards subjected to the friction of the *soft fleshy* part of the hand, until the surface works up in the form of a fine granulated powder. This brings off as much of the old varnish and foreign matter as may have amalgamated with the mixture, which, by few or many applications, will ultimately render a painting, however old or discoloured, as pure as the day it was painted.

No fear of injury need be entertained in the operation, as, if twenty applications are made after the picture is thoroughly clean, the *mixture* and *friction* cannot in the slightest affect the colour, further than polishing the surface, and, when works of art have been neglected, broken, or otherwise damaged, the restoration is best effected when confined to the parts destroyed only.

In making use of this material, any work of art, however valuable, may be operated on in perfect *darkness*, as the principle is not only effectual, but utterly incapable of causing an injury to the most delicate tints. It is sold in bottles at 4s. 6d. and 8s. each, but, in order that its efficacy may be thoroughly tested, sample bottles, at 1s. each, may be obtained.

TO MAKE KNOTTING.

One pint of vegetable naphtha, one teaspoonful of red lead, quarter of a pint of japanners' gold size, seven ounces of orange shellac. Add these together, set in a warm place to dissolve, and let the whole be frequently shaken.

ANOTHER.

Mix white or red lead powder in strong glue size, and apply it warm.

The knots in new wood always require to be killed, or covered, by one or other of these mixtures, which should be applied with a tool. There is, however, a patent knotting now manufactured, and sold at the oil and colour shops.

DISTEMPERING.

THE amateur may not be aware that the process of colouring, whitewashing, and painting in size-colours is called "distempering." This term is generally applied to all colours mixed or diluted with water, and rendered firm, or adhesive, by the addition of glue or parchment size. Ceilings are ordinarily distempered, and not painted. It has long been found that painting in oil is too heavy in its effects for certain purposes. It is so, for instance, in the case of ceilings, which require something of an aerial lightness, especially in drawing-rooms, boudoirs, and such like apartments, as distinguished from the more substantial painting in oil-colours.

There are really comparatively few painters who are thorough masters of the apparently simple process of distempering. It depends upon so many conditions that it is often very difficult indeed for the most experienced workman either to satisfy himself or his employers. And when failure does result, it is not always that the cause can be readily divined and a remedy applied. This may be, and probably is, due in a great measure to a want of chemical knowledge, by which alone the "why" and the "wherefore" are elucidated. But whatever may be the cause, certain it is that painting in distemper colours is not always satisfactory.

But when skilfully executed, and the conditions which result in failure are absent, distemper work is

much lighter and purer in tone than painting in oil colours. The whiteness, for instance, of distemper work is purer than the whiteness of oil colour, and any tint that the distemper may be made to partake of, will accordingly, as compared with the corresponding tint in oil, be purer also. It will, however, be obvious that distempering, whatever may be its advantages in this respect, is not suitable for use on interior walls which are liable to suffer from contact, or which are subject to rough usage. In these cases flatting is absolutely essential, unless, indeed, the more prevalent, but less commendable practice of covering the walls with paper-hangings be adopted.

It has been truthfully observed by a writer on this subject, in a weekly periodical devoted to the building trades, that the preparation of ceilings and walls for the finishing in distemper is of vital importance to the ultimate result, inasmuch as if they are not properly prepared, they will rarely turn out well at the finish. The first thing is to stop the suction, for except the finishing colour lays on cool, and without any, or very little suction, the work is apt to be more or less rough, and will gather or accumulate more colour in one part than in another, and consequently will look shady. And here we may note a fact which shows the necessity for the use of a preparation. It will almost invariably be found that one part of a wall or ceiling will have a greater power of absorbing colours than another part. It will be found, as with the first coat of paint, that some parts will be glossy while other parts dry dead—that is, the paint has sunk into, or been absorbed on the dead parts, while on the glossy parts it remains on the surface (of course, in oil painting, this is remedied by successive coats of paint). This arises from the unequal finish of the plaster work.

It therefore becomes necessary that some means should be adopted to stop this power of absorption,

and for this purpose various preparations are used. The following has been recommended as a suitable preparatory coat, and will be found to answer the purpose very effectually :—

Mix about a dozen pounds of the best whiting with water to the consistency of a soft paste ; add sufficient parchment or other size to bind the colour fast ; add about two ounces of alum, and the same weight of soft soap dissolved in water ; mix well together in a pail (of course somewhat similar proportions will answer for any quantity), and strain through a coarse cloth or a metal strainer. The colour should now be tried on paper and dried before a fire, or otherwise, in order to test whether sufficient size has been used to “bind” the colour, and to prove that the tint is what was required. The finishing coat can be laid on without disturbing the first one. The alum and soft soap contribute to this effect in a great degree, and help to form a semi-impervious coating upon which the finishing coat will work cool and without suction. Caution must be observed not to have the size too strong, or it will be very liable to chip, especially in rooms where much gas is used.

We quote the following from the pen of “An Experienced Workman,” in the practical periodical before alluded to, and have to observe that the directions given are thoroughly trustworthy :—

“In order to produce good work two things are essentially necessary in the mixing of the distemper, namely, clean and well-washed whiting and pure jellied size. The whiting should be put to soak with sufficient soft water to cover it well and penetrate its bulk. When the whiting is sufficiently soaked, the water should be poured off, which will remove any dust or foreign matter from the whiting. It should then be beaten up or stirred until all the lumps are broken, and it becomes a stiff, smooth paste. A good workman will do this carefully with the hand, and

will manipulate it until it is quite smooth, but it may be done most effectually with a broad stick or spatula, and then strained through a metal or other strainer. The size should now be added, and the two lightly but effectually mixed together. Care should be taken not to break the jelly of the size any more than can be avoided, and this may be best done by gently stirring the mixture with the hand. If the jellied state is retained intact, the colour will work cool and lay on smooth and level. The size, whether made of parchment clippings, glue, or any other material, should be dissolved in a sufficient quantity of water to form a weak jelly when cold. In practice, we find that distemper mixed with jellied size will lay on better and make a better job than when the size is used hot. Colour mixed on the former plan works cool and floats nicely, while the latter works dry, and drags and gathers, thus making a rough ceiling or wall; and the difference in the labour required is very much in favour of the jellied size. A little alum added to the distemper has a good effect in hardening, and helps it to dry out solid and even."

It is customary in some cases to give the ceiling or wall a couple of coats of oil paint previous to the application of the distemper. This stops the suction, and gives a richness to the colouring; but if, as frequently happens, the wall gets low in temperature during a continuance of cold weather, when a change takes place, the condensation is so great that the water runs down in streams to the top of the skirting, and the colouring matter thereby becomes stained.

MIXING COLOURS IN DISTEMPER.

Adopting the course laid down in the chapter on House-Painting, we proceed to give a few instructions for mixing various colours in distemper, &c., by which the amateur will be enabled to acquire at least a theoretical knowledge of the subject, which will greatly facilitate his progress in mastering the practical details:—

TO MAKE SIZE.

The best size for distemper colours is made from parchment clippings, which must be subjected to strong boiling. Put the clippings into an iron kettle, and fill it with water; let it stand twenty-four hours, till the pieces are thoroughly soaked; and then boil for five hours, occasionally taking off the scum. When the liquid is sufficiently boiled, take it from the fire, and strain it through a coarse cloth. If the size is to be kept for a length of time, dissolve three or four ounces of alum in boiling water, and add to every pailful. The size must then be boiled again till it becomes very strong; it must be strained a second time, put into a cool place, and it will keep for several weeks.

Different kinds of size are sold at the colour shops, some of which are exceedingly pure, and may be depended upon for general purposes.

PINK.

Dissolve in water separately whiting and rose pink; mix them to the tint required; strain the colour through a strainer, and bind with size.

LILAC.

Take a small quantity of indigo, finely ground in water, and mix it with whiting till it produces a dark grey; then add to the mixture some rose pink. Well mix and strain the colour, and a beautiful lilac will be the result.

LIGHT GREY.

A small quantity of lampblack mixed with whiting composes a grey. A wide range of shades may be obtained, from the darkest to the lightest grey.

FRENCH GREY.

Take the quantity of whiting required, and soak it in water, then add Prussian blue and lake which have been finely ground in water. The quantity of each of those colours should of course be proportioned to the warmth of tint required. This is a handsome and delicate colour for walls. Rose pink may be substituted for the lake, but it does not make so brilliant a colour, neither is it so permanent.

ORANGE.

This is a mixture of whiting, French yellow, or Dutch pink and orange lead. Those ingredients may be proportioned according to taste. This colour cannot be worked except in a size jelly, as the orange lead is a colour which has great density, and will sink to the bottom, separating from the other colours.

BUFF.

A good buff may be produced by dissolving, separately, whiting and yellow ochre in water. A little English Venetian red should be added to give a warm cast. Mix with size, and strain as before directed.

DRAB.

Dissolve whiting in water, and grind some burnt umber very fine in water. Mix to the tint required. Raw umber will make a drab of a different shade.

ANOTHER.

Dissolve, separately, some whiting and yellow ochre in water. Take a quantity of each and mix them together. Grind a little lampblack very fine, and with it sufficiently stain the colour to make the tint required. Another shade may be obtained by adding a little Venetian red. By diversifying the proportions of these pigments, a great variety of colours may be produced. These are all permanent colours, and may be depended upon.

SALMON.

An excellent salmon colour may be made by dissolving whiting in water, and tinging it with the best English Venetian red. A little Venetian red, mixed with lime whitewash, and a quantity of alum, will answer very well for common purposes.

With regard to the method of laying on distemper colours, it may be accepted as a fact that the sooner they dry, after they are laid on, the better. The best plan is to close the windows and doors, and stop the free circulation of the air as much as possible while the distemper colour is being laid on. This prevents its drying too quickly, and enables the workman to lay the colour on more evenly, and with less danger of showing any piecings; but the moment that the wall or ceiling is covered, the windows and doors should be thrown wide open, and as much fresh dry air admitted as possible. This free circulation of air absorbs and carries off the moisture from the walls.

The evaporation is quick, and a good job results. If the distemper does not dry quickly, it becomes slightly discoloured and shady. One great point to be aimed at is, of course, a level and uniform surface when dry, and this desirable result can only be obtained by the colour being laid on of a proper consistency, and with every attention to equality.

When ceilings are badly stained and discoloured from the accidental overflow of cisterns, water-closets, &c., the only effectual method of treating them is to wash them off with clean water, and give two coats of oil-paint before the distemper is applied. Other processes are adopted, but, as they cannot be depended upon, it is much better, in the first instance, to incur a little extra expense, and paint the discoloured ceilings in oil-colours, whereby a satisfactory result will be secured.

GRAINING & MARBLING.

ALTHOUGH ostensibly a branch of painting and house-decorating, the art of graining and marbling is practised by a class of workmen who devote themselves almost exclusively to the imitation of woods and marbles. It is a step in advance of the more common work of house painting. Its proper execution demands taste, not a high order of taste, assuredly, but still such an amount as every one is not fortunate enough to possess, and cannot readily acquire. Many persons who set out with the intention of becoming good grainers and marblers, utterly fail, and after a time abandon the attempt. If the successful imitation of the stains and striæ of wood and the veins of marble does not call for a high order of taste, certain it is that it requires a peculiar aptitude to master the materials employed, so as to produce with readiness faithful imitation, and to add, in so far as may be considered expedient or desirable, some slight improvement to the natural products which are being counterfeited. The work of the grainer must not always be laboured up to a high standard of imitation merely. It would not always be artistic or commendable to imitate the hard, formal flower of oak, for instance. The grainer, however faithful may be his imitation in its characteristic features, strives to give a beauty and regularity to his work which are not found to prevail in the natural wood.

Hence it is a fact that a room which has been grained by a master hand will be uniform in colour, and the striæ will be such as the choicest specimens of wood only would present, whereas it would be almost impossible to secure these desiderata if, instead of imitation, the natural wood were employed.

It has long been predicted by a certain class of art critics that the imitation of woods and marbles cannot be continued as a fashion for any lengthened period, inasmuch as it is, after all, only a sham and a make-believe. But our daily life is, from beginning to end, made up of shams. It is not everybody who can luxuriate in the magnificence of a palace; nor can every one clothe himself in purple and fine linen. Dives, blest with riches, may indulge in costly grandeur, but surely Lazarus may, within his poor means, affect the same grandeur; and if the one feels as much delight in the aluminium as the other does in the pure gold, it would be most unphilosophic to curtail his pleasure and tell him that he should not indulge in the equally gorgeous, but intrinsically worthless, article. Mr. Ruskin is exceedingly severe on this kind of imitation, and it may not be out of place to quote his words on the subject, expressing, however, at the same time, our entire and hearty disapproval of the nonsense that he writes. He says, "There is no meaner occupation for the human mind than the imitation of the stains and striæ of wood and marble. The grainer must think of what he is doing, and veritable attention and care, and occasionally considerable skill, are consumed in the doing of a more absolute nothing than I can name in any other department of painful idleness. I know not anything so humiliating as to see a human being with arms and limbs complete, and apparently a head, and assuredly a soul, yet into the hands of which, when you have put a brush and palette, it cannot do anything with them but imitate a piece of wood. It cannot colour:

it has no idea of colour. It cannot draw: it has no idea of form. It cannot caricature: it has no idea of humour."

It is something that so great an authority should admit that there is "occasionally considerable skill" exhibited by the grainer, but that the result is an "absolute nothing" cannot be so readily conceded. A writer on the foregoing passage has aptly remarked that, "with all due respect for Mr. John Ruskin, and with all due deference to his service to art, we cannot help characterising his description as a piece of the most arrant nonsense, and feel bound to protest with all our might and all our strength against such false teaching, notwithstanding the high authority from which it proceeds, the more so that there are a number of our architects and decorators who, either not having any mind of their own, or not being able to form an opinion for themselves, blindly follow their leader, and, in attempting to avoid Scylla, fall into Charybdis. They cannot comprehend the fact that even a great mind, in its search after truth, and in its enthusiastic desire to bring about a better appreciation of all that is good and true in art, may be led into error from the very intensity of its enthusiasm; but these people, having unbounded faith in their oracle, believe that everything, however absurd, which falls from his lips must be true, and consequently rush into such an extreme of Ruskinism that they prefer the most outrageous ugliness to the greatest beauty if that beauty is an imitation."*

There is a great deal of truth in this sweeping criticism, although it must be admitted the believers in Mr. Ruskin make out a tolerably good case. Continuing his remarks, the writer already quoted holds that, in contradistinction to Mr. Ruskin's dictum, no man can make a first-class imitation of marble except he has a knowledge of form and colour. It is a com-

* *Building News*, June 3, 1870.

paratively easy matter to paint the representation of a round ball which shall appear to stand out in full relief according to its diameter, but, if we cut the ball into two parts, and try to paint it as sunk in a flat surface, and to appear transparent, so that we may see, as it were, down into its depth, we shall find it a very different matter to painting the same object in relief. Now this is exactly what the marble painter has to do—not, perhaps, in the form of a ball, but in all sorts of irregular forms which, to be good, must have an apparent depth and translucency which can only be got by one having a consummate knowledge of colour and form, and a large amount of manipulative skill, for the characteristic features of each marble are so distinct and peculiar that no man devoid of a knowledge of form could imitate them. Mr. Ruskin says the grainer must think of what he is doing with veritable attention and care. We quite agree with him. If he had used a thousand words he could not have said more clearly that the imitation of woods and marbles is a work requiring thought, care, and skill in its execution, taxing the powers of the mind. Are these the particular signs of meanness? If so, what a vast amount of meanness there must be in this world! Other art critics and decorators who have devoted consideration to the subject have expressed their surprise that grainers do not have specimens of wood and marble before them to copy from, arguing that, if imitation is permissible at all, it ought to be literal, and not conventional. Here, again, we conceive there is an error, for the imitation of woods and marbles is not merely practised with the view of palming off an inferior article as a superior, but with the object of embellishment; and surely it is advisable to use colours and adopt forms which are the most pleasing to the eye rather than to adhere strictly to even the defects of the particular wood or marble represented. It has been laid down

by Mr. Owen Jones that imitation of wood and marble is allowable in all cases where the real wood or marble would be used by the architect, and this really is the practical common sense view of the matter. No one with ordinary taste would think of marbling, say the styles of a door, or of graining pilasters in oak, although these anachronisms are sometimes met with in work which cannot lay claim to the smallest pretensions to good taste. In so far as these shortcomings are observable, graining and marbling are deserving of all the reprehension which can be cast upon them. But these are quite exceptional cases. No workman of experience would dream of perpetrating anything so unnatural. As a rule, the modern grainer is thoroughly master of his art, and knows where to apply it advantageously, keeping in view at the same time the accessorial decoration, or, it may be, keeping his own work duly subordinated to the general plan of ornamentation adopted.

It is very difficult in a mere letter-press description to convey to the beginner an accurate idea of the methods adopted by the leading grainers, but in so far as this can be done it is hoped that the following hints will be found exhaustive and to the purpose. The ground colour to receive the graining is a matter of some importance, for unless this be of the proper tint it will not be possible to produce satisfactory results. It is of the first importance that the ground should be smoothly prepared, and free from marks of the brush; that it should be allowed to stand for two or three days, to harden before the graining is effected, and that it should neither be too oily nor too flat.

GRAINING GROUNDS.

Subjoined are a few recipes for mixing the ground colours for the imitation of various kinds of woods and marbles.

LIGHT WAINSCOT OAK.

White lead and yellow ochre, mixed to the required tint. Some grainers prefer a perfectly white ground for very light oak for inside work, but it is always difficult for any but a perfect master of the art to proceed satisfactorily on a white ground, and the work, when completed, is apt to have a chalky effect, even though a dark varnish be applied.

A DARKER WAINSCOT OAK.

Mix white lead, middle chrome, and yellow ochre ; or white lead and Oxford ochre ; or Oxford ochre, white lead, and Venetian red.

DARK OAK.

White lead, Venetian red, and yellow ochre.

VERY DARK OAK.

White lead, raw sienna, burnt umber, and Venetian red ; or burnt and raw sienna, white lead, and burnt umber.

These colours, mixed in different proportions, will produce a multiplicity of tints suitable to receive the graining colour, their strength being of course determined by the greater or lesser preponderance of white lead.

MAHOGANY GROUNDS.

There are various notions extant amongst grainers as to the best grounds for mahogany graining, some

preferring a ground of a deep yellow cast, whilst others choose one approaching a bright red. The reds and yellows used are Venetian red, red lead, vermilion, raw sienna, burnt sienna, orange chrome, middle chrome, Oxford ochre, &c. These colours can be mixed to the tint required, an addition of white lead being made in each case, as the positive reds and yellows are too powerful unless diluted in turn by white. Venetian red, orange chrome, and white lead are the colours most generally used, and these three will, according to their predominance or subordination, make such a variety of tints that the most fastidious grainer need have no misgiving that the result will not come up to his expectation, if he exercise due discretion in mixing the colours. It should be observed here, however, that in practice the grainer very seldom has any hand in mixing the ground colours, this being properly the work of the house painter. Amateurs, it may be presumed, will often have occasion to do so, and hence it is necessary to point out that the best way to succeed is to add the colours to the white lead in small quantities at first, and to keep on gradually staining the white till the required tint is obtained; otherwise the reds and yellows may deceive as to their strength, and the tint will become redder or yellower than was anticipated or intended.

ROSEWOOD GROUND.

Venetian red, vermilion, and white lead. A little scarlet lake is sometimes added for superior work, but this of course is too expensive for general use. Some painters mix with the reds a small quantity of raw sienna or chrome yellow.

BIRD'S EYE MAPLE.

White lead alone is preferred by some grainers, but the majority of painters use a little yellow ochre

to kill the rawness of the white, and this is much the better plan to adopt. Beginners are apt to make the ground too yellow, a mistake that should be avoided at the outset, as the varnish which has subsequently to be coated over the work will give transparency, and add a pale creamy tone, whereas, if the ground be too yellow, the result will be heaviness.

SATIN WOOD.

The preceding remarks apply equally to satin-wood grounds.

For these light woods it is of the utmost importance to have the grounds painted with finely strained colours, and perfectly smooth. Too much time can hardly be spent in their preparation.

There are many other kinds of woods imitated by the grainer, but the foregoing comprise all that it is necessary to particularise under this head, as the colours already mentioned are sufficient for nearly every purpose. Supposing now that the grounding is finished and perfectly dry, that the painter has forwarded the work ready for the hands of the grainer, we go on to the next step in the process, which brings us to

THE METHODS OF IMITATING DIFFERENT WOODS,

and we commence with that which is most generally used in both internal and external decoration, namely the imitation of oak.

OAK, IN SPIRIT COLOUR.

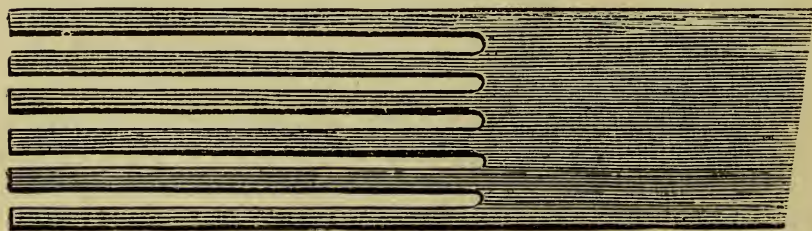
There are two methods by which oak is imitated by the grainer—the *spirit* and the *oil*,—the latter being most generally preferred, especially for outside work, owing to its greater durability.

Spirit graining colour is made in the following manner :—Rub up a quantity of whiting in turpentine on the painter's slab ; add to it sufficient burnt umber and raw sienna to stain to the required tint ; then dilute with turps, gold size, and a small proportion of boiled oil or common varnish. The whole should be strained through a piece of muslin, or fine sieve, into a paint pot, to keep back the impurities of the whiting, and this having been done, the colour is fit for use.

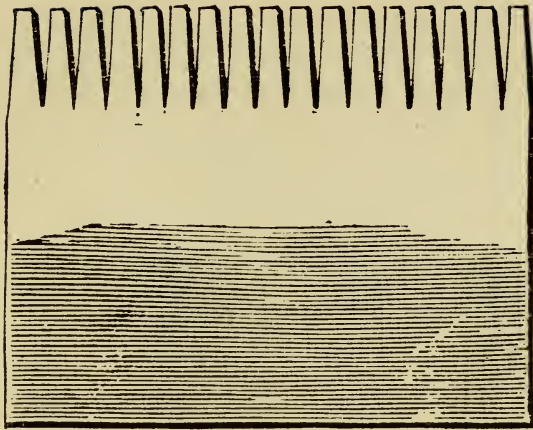
Spread the surface to be grained with this preparation, using it sparingly, as a semi-transparent layer, the brush not being overcharged, and not too long in the hair. As the spirit colour dries rapidly, only a small portion of the work should be covered with it before the graining combs are applied.

These combs are procurable of different sizes. Those mostly used are made of steel, but the larger ones are made of bone ; and sometimes thick leather, notched irregularly, to form the coarse grain which frequently accompanies the heart of oak, is preferred by the grainer, who cuts the notches or teeth to suit his own taste. The combs are sold at so much per inch, and are made in a variety of widths and of different degrees of fineness.

The subjoined cuts represent respectively a one-inch moderately coarse steel comb and a wider comb of leather :—



STEEL COMB.

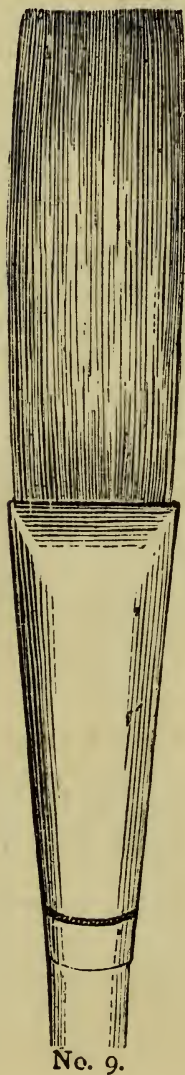


LEATHER COMB.

If it is a door that has to be grained, the best plan is to rub the spirit colour over only one panel, then immediately to draw one of the fine combs down, and to repeat the combing once or twice, the last time giving a tremulous or wavy motion. The mouldings of the panel should then be cut in with a tool, and also combed; and if the colour has run into the crevices, showing dark and blotched marks, a little hard round hog-hair fitch should be applied to the crevice, and the superfluous colour removed before it has had time to set. The fitch may be rubbed dry on the styles of the door. Proceed similarly with the other panels. Then cut in the styles, keeping the crossings of the grain of the wood clean, so as to form neat joints. For the styles larger or coarser combs are used, and a more curved flow of grain is generally given, and the heart is subsequently worked up to the combing, by which the imitation is rendered exceedingly natural.

After the combing-in has been completed for about half an hour, the veins or flower of the wood must be imitated. These veins are lighter than the graining colour, and therefore what we have to do is to remove the graining colour, leaving the original oil ground to

form the lights—that is to say, in technical language, the lights are “taken out.” To do this, a small flat fitch is employed, and it is very important that this fitch should be of first class quality, or it will be impossible to proceed satisfactorily. Specimens of the veining fitches are appended :—



The spirit graining colour, as used for the combing, should be thinned down by the addition of a little spirit of turpentine. The fitch should be charged with this preparation, and the flower of the wood marked on the panels. After a few touches with the fitch, charged with the diluted graining colour, have been put on the combing, a piece of old flannel must be briskly rubbed over them, when the graining colour will be removed and the light ground underneath exhibited. The light veins are thus formed, and the grainer must proceed in the same way, drawing a few veins with the fitch, and then wiping off with the flannel, so as to procure the lights. The half lights are obtained by twisting the flannel round the thumb, and by rubbing, or smudging across the combing colour. A variety of exceedingly natural gradations may thus be obtained.

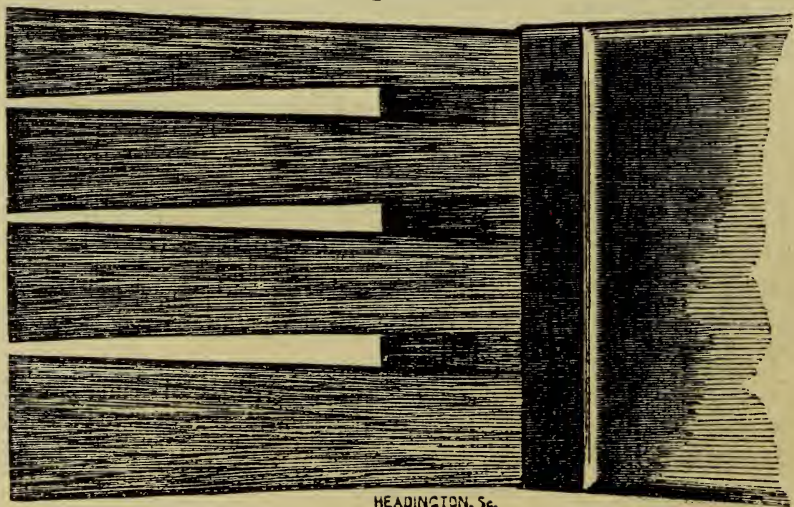
The next step is what is called the "overgraining." This is effected in water colour. But as the spirit graining colour contains oil and varnish, it must be obvious to the merest tyro in painting that water colour cannot be laid over it without some kind of preparation. Water and oil do not cohere kindly. It is necessary, therefore, to treat the oil-colour so as to make it friendly to the subsequent process of overgraining. There are two or three methods of doing this. If it is only a single door that has been grained, a simple plan is to use dry whiting, which should be smartly rubbed over the work with a piece of flannel or old rag, and the superfluous powder dusted off. The spirit graining colour will then receive the overgraining of water-colour, without "cissing" or any signs of imperfect cohesion. But for the use of the whiting, the overgraining colour would not adhere at all, but would run off.

Another plan which is generally followed where a large quantity of graining has to be overgrained, is to mix a little fuller's earth in water and brush this

entirely over the work which has been combed and veined. When this is dry, the overgraining colour in water will adhere without difficulty.

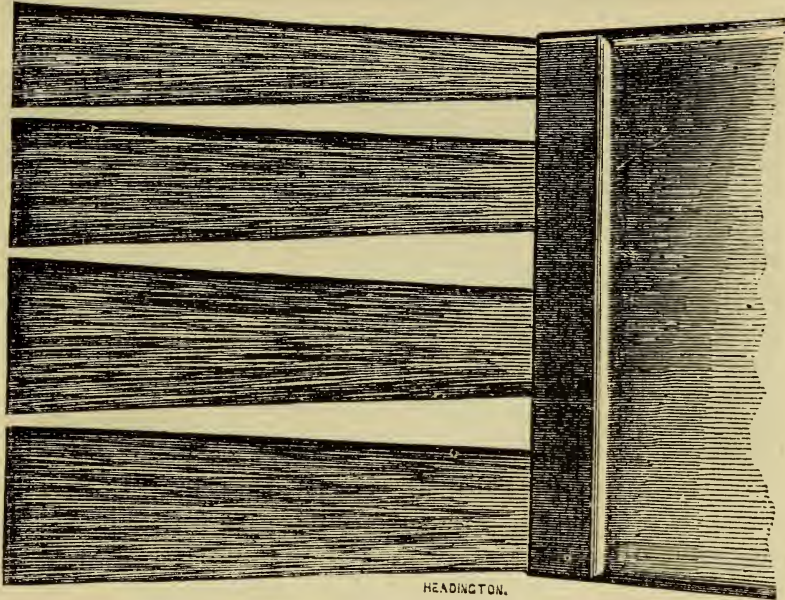
The application of dry whiting is advantageous, in that it enables the grainer to proceed and finish his work rapidly, whereas if fuller's earth or yeast is used with water, he is compelled to wait till it has become dry before he can overgrain and complete the work.

The stages having thus far been explained, the grainer must procure some burnt umber or Vandyke brown ground in water, and dilute it with about equal proportions of table-beer and water. The colour thus prepared should be kept in a clean paint pot. The overgraining is effected by dipping a flat hog-hair brush, three or four inches wide, in this colour, and drawing it over the work, in most cases in the direction of the combing, but occasionally crossing it. The hair of the brush, being thinly placed, will separate in patches, and hence the colour will be deposited in streaks, resembling the natural gradations which the wood invariably presents. There are several varieties of oak overgrainers, which are mostly made of the best hog-hair. Some grainers prefer what are known as the "castellated" overgrainers:—



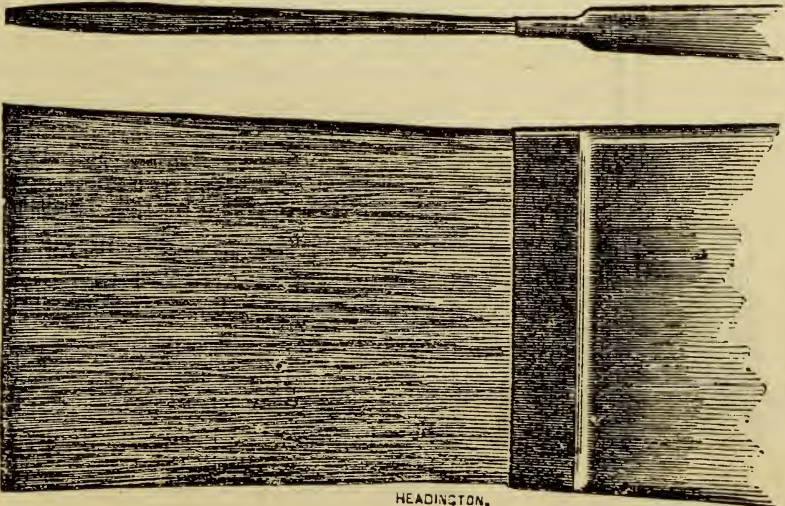
HEADINGTON. Sc.

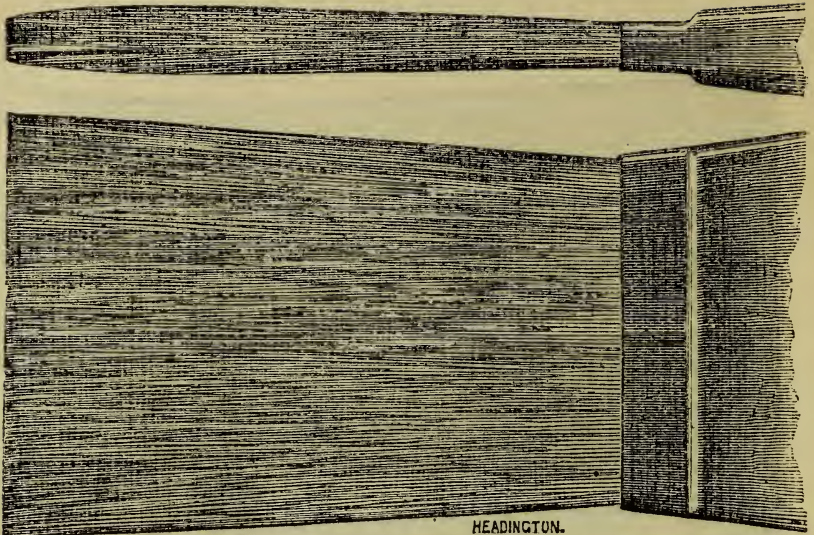
Others use only the "knotted":—



And others again have a partiality for the flat hog hair brushes, separating the thin row of long hair into patches when it is charged with colour:—

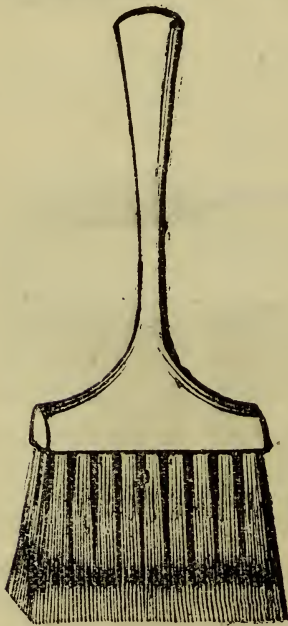
END VIEW, SHOWING THICKNESS.





HEADINGTON.

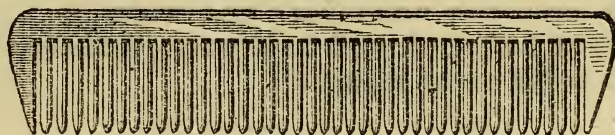
Whilst those who take the greatest pride in their work make good use of all these varieties, and would feel ill at ease if called upon to dispense with any of them.



BADGER SOFTENER.

This overgraining colour must not form a violent contrast to the graining itself, but should be only a trifle darker in tone than the under colour, so that it adds luminosity and richness to the work without appearing harsh or unduly prominent. If successfully accomplished, the overgraining will add immensely to the beauty of the work. It may be added that the knots are touched and brought out with the water-colour, and, if the heart is imitated, a little piece of black may be rubbed up with the colour, to give the sappy appearance which is often seen in the natural wood. The over-

graining requires softening with a badger softener, of which an illustration is appended.



COMB FOR DIVIDING OVERGRAINERS.

These combs are 6 inches long, and have the same teeth throughout as in the engraving. The double are 7 inches long, one-half being fine and the other coarse, like a dressing-comb, but the teeth are cut in such a manner as to cause the hair to divide with a sharp edge at the points.

When the overgraining is dry, which will be the case in a few minutes, the work is ready to receive a coat of varnish. If the varnish is applied on the same day as the graining, care should be taken that the brush is not worked about too much, or the graining colour which has not had time to dry thoroughly will be partially removed, the varnish dissolving the spirit colour. It is, therefore, advisable to leave the work, when it can be done conveniently, till at least the next day before applying the varnish.

For taking out the "lights" in oak spirit graining the following process has been recommended, and may be adopted in certain cases, but the method above described has superior advantages:—Dissolve Scotch soda in water—let it be tolerably strong—add a little burnt sienna ground in water. Now take a flat fitch (hog-hair), dip it into the solution of soda, and mark out or put in any figure that may be desirable, taking care not to use it too freely, or else it will run and make marks, which are not required. It must be borne in mind that wherever the soda touches there will be a mark. When the work is all figured, the whole must be well washed with a sponge and plenty of clean water, which will clear off the soda, and wherever it has touched the graining colour

will be destroyed, and will wash off, leaving the colours clear and bright. The work must then be brushed over with weak beer and water, in the proportions of half beer and half water, and then over-grained in the usual manner.

OAK, IN OIL-COLOUR.

Oil graining colour is made in the following manner:—Procure some finely ground burnt umber and raw sienna (or Vandyke brown and raw sienna, if a dark oak is required), and thin with about equal parts of linseed oil and turpentine. Add a large quantity of patent dryers to make it stand the comb. The colour is now ready for use. Rub it sparingly over the work to be grained with a good large brush, taking care to lay it on as evenly as possible, because, being transparent, if one part of the work has a thicker layer of the graining colour than another, it will appear heavy in one part and lighter in another, and the result will be a want of uniformity. As this colour does not dry so rapidly as the spirit graining colour, a whole door may be rubbed in before the combing is commenced.

With respect to the combing, we cannot do better than quote what has been said on the subject by "An Experienced Workman," in *The Building News*. Speaking of combing in oil-colours, he says: "The graining colour is brushed over the work in the ordinary manner with a pound-brush, care being taken not to put too much colour on, or else it is very liable to be dirty. A dry dusting brush is now used to stipple with, which, if properly done, will distribute the colour evenly. It is now ready for combing. In the real oak it will be found as a rule that the grain is invariably coarser on one side of the panel than the other; this arises from the very nature of the growth of the tree; it is therefore well to imitate this pattern, and, in order to do so, we take first a medium

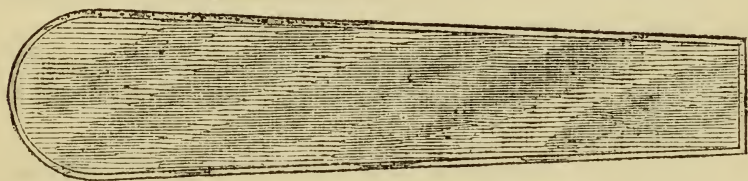
or coarse-cut gutta-percha comb, and draw it down one side of the panel ; then use a finer one to complete it. This comb will leave the marks of the grain in clear unbroken lines from top to bottom of the panel. We now take a fine steel comb and go over the whole of the previous combing ; but in drawing this comb down, we either move it in a slanting or diagonal direction across the previous grain, or draw it down with a quick and short wavy motion or curl. Both the former and the latter motion will break up the long lines left by the gutta-percha comb into short bits, which of course represent the pores or grains of the real wood. It will be obvious that there are several other motions of the comb having the same end in view ; and by using the gutta-percha or cork combs in conjunction with the fine steel, an infinite variety of grain may be produced. Some grainers are in the habit of using the coarse steel combs with one or more folds of thin rag placed over the ends of the teeth ; but this is a style of combing which has nothing to recommend it, and very much may be said against its use.* A natural variation in the grain may be produced by one comb alone, according to the manner in which it is held. For instance, if we take a coarse or broad-toothed gutta-percha comb, and commence at the top of the panel with the comb placed at its full width ; if drawn down in this position it will leave a grain of the same width as the width of the teeth ; but if we start with the full width, and gradually turn the comb, or slightly incline it to one side—that is to say, on its edge—we thereby graduate the grain from coarse to fine at pleasure, and, by holding the comb at a certain inclination, we may actually make very fine grain with the coarse comb. This style of combing is very useful for varying the grain upon the rails and styles of doors or other woodwork, and for defining the

* We have seen some very beautiful imitations produced in this way.

joints, and a very great variety of grain may be thus produced. A very important point, requiring strict attention, is the formation of the joints in the wood, as much of the effect of otherwise good work is lost in consequence of neglect in this respect. In looking at a real oak door, the joints of the styles and rails are clearly and sharply defined, not by any defect of workmanship, but by the difference in the run of the grain, the styles being perpendicular, and the rails horizontal. The rails being cut sharp off by the styles, show a perfectly straight line. The light also acts differently upon the two, simply because the grain or fibre of the wood is exposed to its influence under different aspects. This also tends to produce a difference in the depth of the colour of rails and styles, and panels also. It will be evident that no imitations can be considered really good except they include these seemingly unimportant points."

The method of taking out the lights, of figuring, or veining, is very different in oil oak from that already described. The work having been combed, the figure must be wiped out before the colour is dry, and not, as in the previous case, after it is dry. This wiping out of the lights is effected by means of a piece of wash leather or fine rag, held tightly over the thumb-nail. If a rag is used, it should be folded in two or three thicknesses over the nail, the superfluous rag being held by the other hand to prevent it hanging down and smearing the grain; and every time a few veins are wiped, the rag should be moved slightly, so that the same part of the rag will not be used twice, thus insuring clean work. It will often happen that the thumb-nail will get broken, or is too weak to stand the work; in these cases, or, in fact, in any case, a good substitute, or artificial thumb-nail, may be made of gutta-percha, thus: A piece of thin sheet gutta-percha is put into warm water, and, while soft, is wrapped around the end of the thumb, up to the

first joint. It is then pressed with the hand, so as to fit and take the shape of the thumb and nail. This cannot be done at one heating, but will have to be put into the hot water again, and the end pinched and squeezed into form to the shape of the nail, and to fit easy upon the thumb. When this gets hard it may be trimmed into perfect form with a penknife. This artificial nail will answer the purpose admirably if properly made; and even when the natural nail is good, the gutta-percha will serve to save it from injury. Good figuring may also be done by using the blank end of a narrow steel comb with a rag folded over its edge. We have also used a piece of gutta-percha to take out the lights. This should be square-ended, about one inch wide and three or four inches long. Using this instead of the thumb-nail, we have made very successful work of a certain class, but not of the best.



THUMB-PIECE, OR VEINING-HORN.

Many grainers use a piece of thin horn, in shape something like a spatula, about three or four inches long and three quarters of an inch wide, with rounded ends and quite flexible. With this tool the figure is cut or scooped out—we know of no other word which so aptly describes the motion required to effect this—a sort of quick side-long motion, very difficult to describe, and requiring a very considerable amount of practice before it can be worked with any success. There is, however, the same objection to this tool as may be urged against the gutta-percha for figuring, namely, that neither of them take the colour clean away, but leave an accumulation of colour on the edge of the figure,

which is fatal to good work, and therefore we cannot honestly recommend the use of any method but the wiping out with the thumb-nail or its substitute. When the figure is wiped out, it will require to be softened. By softening we mean the imitation of those half-shades seen upon and about the figures in the real wood. Between and around the lights or figure in oak there is always a lighter tint of colour; this arises from the fact that immediately next the lights or figure the pore or grain is invariably darker than it is in the plain parts or spaces between the figure; and this is imitated by doubling a piece of rag into a small roll, and with the side of this the grain is partially wiped away, but not to the extent of taking off the whole of the grain. The grain must still be seen, but of course will not appear nor be as dark as it is on those parts on which it has not been disturbed; and this is exactly the appearance of the real wood. It is only by strict attention to these small matters that success is obtained.

As soon as the oil-colour is dry it should be over-grained in the same manner as that described for spirit graining.*

It may be repeated that, as a rule, strong contrasts between the ground and the graining colour should be avoided. The figure and grain should of course be seen clearly, but only so clearly as to be distinct without interfering with the general and uniform quietness of tone necessary to fulfil the conditions required by the laws of harmony and good taste.

ANOTHER OIL GRAINING COLOUR FOR OAK.

The method which has just been described has at least the merit of simplicity as regards the colour to be used, and that it is most effectual can be vouched, as the result of several years' experience. There are, however, other methods of procedure more or less

complex and difficult; and as in these pages our endeavour is to make the practical lessons conveyed easily understood, as well as to give them in such a way that we may not be charged with being unduly biassed or crotchetty, we gladly avail ourselves of the writings of "An. Experienced Workman," already several times quoted, in the hope that his experiences may be of value to our readers. Whatever may be said in favour of his method of practice, it certainly has not the recommendation of simplicity. We, however, present it for what it is worth. He says:—

"In the mixing of oil graining colour there are two or three things necessary to be noticed in order to its answering the purpose intended. In the first place, the colour should work clean (technically 'rub in clean') and free. It will often happen that the colour will work stiff, and consequently dirty, and in this state will not only produce dirty work, but will occupy thrice the time in rubbing-in compared with colour properly mixed. Oil graining colour also requires to be megilped—that is to say, that oil-colour alone will not stand when it is combed; the marks made with the comb will all run one into the other, and will thus be obliterated. To prevent this running, the colour requires to be megilped, so that the comb marks will retain the exact form as left by the comb. This desirable end is accomplished by various means, amongst which may be named the ordinary bees' wax of commerce, soft soap, hard soap, lime water, whiting, and pure water. When bees' wax is used the best means of dissolving it is to cut the wax into thin shavings or shreds; these are put into a suitable pot or can (earthenware or tin will do) half filled with pure linseed oil, into which a red-hot poker or other piece of iron is plunged, and stirred well. This will dissolve the wax thoroughly and mix it with the oil. When the wax is all dissolved the vessel should be filled with either oil or turpentine,

which still further dilutes and mixes the wax, and serves also to prevent it from congealing, so that it may mix with the graining colour thoroughly. This should be properly seen to, or else the wax is apt to remain in lumps in the colour, and when the colour is spread upon the work, for graining, the wax will be spread unequally and will not harden, and in fact will not dry in parts, to the manifest injury of the work, so that it is absolutely necessary that the wax should be thoroughly mixed with the graining colour in order to produce good work. If soft soap is used, it should first be thoroughly worked up on a pallette or a board with either whiting or patent dryers; by this means we break up the soap and amalgamate it with the dryers, and it will then mix properly with the graining colour. Another method is to break up the soft soap in water to a thick froth or lather; with water in this state it may be beaten up and thoroughly mixed with the oil-colour. When lime water is used, about 2lb. of slaked lime should be thoroughly mixed in a paint can full of water, and the lime allowed to settle; a portion of the water may then be added to the graining colour, and the two well stirred together until they are thoroughly amalgamated. If whiting be used for the purpose, the whiting should be ground in oil and then mixed with the graining colour. Pure water will also answer the purpose. As a matter of course, some grainers like one and some another of the above-named megilps. The wax is the most effectual for the purpose, but there are grave objections to its indiscriminate use. One of these is the fact that the wax causes the grain to stand up too high above the surface of the work, and as the natural grain of oak sinks below the surface in the real wood, it follows that the less the grain is raised in the imitation, the nearer it will be to the real. This raised grain is also objectionable because it destroys that flatness and equality of surface so evident in the

real wood. Soap, which in working has a medium degree of elevation of grain, is very objectionable in use, inasmuch as it is liable to cause the work to crack after it has been some time varnished and become hard, and it is doubly objectionable for use on outside work, as the frequent variations of temperature soon affect all grained work in which soap has been used, and is a fruitful source of cracking and blistering. Lime water has also a tendency to cause varnish to crack. On the other hand, whiting, when used in oil graining colour, although it has the same effect as wax in causing the grain to stand up too high, also makes it work spongy and impoverishes the colour, for the moment whiting is mixed with any semi-transparent colours—such as Vandyke brown, burnt sienna, &c., &c., their purity and richness is destroyed. On the whole, we prefer to use pure water, for if it is well mixed with the oil-colour, it answers the purpose of megilping it sufficiently to hold the combing until it sets; the water then evaporates and leaves no injurious effects behind, and the projection of the grain is less than it is if any other medium be used. The most useful colours for mixing oak graining colour are raw and burnt Turkey umber, Oxford ochre, Vandyke brown, and burnt sienna. The first three, with the addition of ivory black, are in our opinion, all that is required for mixing any shade of graining colour. For light oak or wainscot graining colour, mix two thirds linseed oil with one third turpentine; add a little Oxford ochre and raw Turkey umber in sufficient quantity, according to the shade required and amount of stuff mixed. No rule of quantities can be laid down here, inasmuch as the quantities must be regulated by the workman at the time of mixing and place of using. Terabine, or liquid driers should now be added, the quantities being governed by the fact as to whether the graining colour is required to be quick or slow drying. A safe

and efficient quantity to use (that is, if the liquid drier is of the best quality) is about half an ounce to a pint of colour. This will cause the colour to dry in about seven or eight hours, but twice the quantity may be used with safety if the colour is required to dry very quick. Sugar of lead ground in oil may be used as a drier for graining colours, but the liquid drier is better. Many persons use the ordinary patent drier, which, if used in sufficient quantity, will also act as a megilp; but we altogether object to its use, as it not only injures and causes the colour to be muddy, but it is spongy, stands up too high, and in fact has all the bad qualities of the other megilps, without a single redeeming quality of its own. We may now briefly sum up the foregoing description of mixing oil graining colour, as follows:—Mix burnt umber or Oxford ochre with linseed oil and turpentine in a can or pot, add terabine or liquid driers, beat or stir well up together; add pure rain-water in the proportion of one half pint of water to three pints of oil and turps; beat or stir up until the whole is thoroughly mixed together, then strain the whole through a fine strainer or a double fold of fine muslin. The colour should be thinned until it works freely and lays on clean. What we mean by laying on clean is that when the colour is being brushed over the work to be grained, if it is not properly mixed it will gather or accumulate in the quirks and corners, and will be shady and dirty looking; but, if properly mixed, it will lay on evenly, and be easily spread, and will look clean and of one uniform shade of colour. It will be evident that this is a very nice point in the mixing, and is of great importance to the success of the work. Care and cleanliness of working are as necessary to the successful carrying out of this work as to more important work; and therefore it is essential that the colour, the brushes, and all working tools should be clean to begin with, and be kept clean.

In mixing the colour for a medium shade of oak, it will be found best to use raw Turkey umber with a little burnt umber added, and for a rich dark oak burnt umber may be used alone, except a cool tone is required, when a little ivory or drop black may be added."

TO IMITATE OAK IN DISTEMPER. .

The colours used for this species of graining, which is now seldom used, are equal quantities of burnt and raw umber, varied with other colours according to taste, ground very fine in ale. This should be kept in a well-corked bottle, in order to keep dust and other impurities from it, and when required for use it should be diluted with weak ale to a proper consistency for graining. The ground being dry, take a large tool well filled with this colour, and rub it over the panel in an even manner. Have ready a sponge, a bowl of water, and a straight-edge. Place the straight-edge against the work, and, with the sponge moistened with water, draw out the light shades in a perpendicular manner, then wipe with a large dusting brush the panel, striking the work with the end of the brush in quick succession till you get to the bottom, when it will leave the natural grain of the wood. When this operation is finished, immediately take a piece of wash leather moistened, and wipe out the veins. When the colour is dry, put in some dark veins of the same colour, and allow this to dry also. Then, with a flat hog's-hair brush, dipped into burnt umber thinly diluted with ale, pass over the panel in a perpendicular direction ; and as soon as one panel is finished, take a wet rag or sponge, and carefully wipe off all the colour which may have gone beyond the panel. When all your panels are finished, commence on the middle upright styles, varying the grain according to taste, but always in a downward direction. When all the middle styles are thus far com

pleted, lay the straight edge over the work finished, and pass the tool with a little of the graining colour from top to bottom of the door; this will make a neat joint, both at the end of the styles and panels. When dry, take the flat graining brush, and dip it in the thin glaze of umber, and pass over the work, not too straight and formal, but in a spirited manner, occasionally giving a free turn to the brush, which will give a pleasing variety, and make the imitation look quite natural.

It must be obvious that, to effect this kind of graining properly, it will be necessary to go over the first graining colour with a mixture of gold size, varnish, and turpentine, so as to set or fix it prior to the application of the overgraining, which would otherwise remove the under colours and completely spoil the work.

ANOTHER OAK IN DISTEMPER.

This method of imitating oak in distemper is so excellent that, should it be exposed continually to the hot rays of the sun, it will never fade. For the graining colour dissolve some gum Arabic in hot water, and mix it with raw sienna, whiting, and Vandyke brown, ground in beer. Spread the surface very evenly; then take a dry dusting brush, and draw it down the work, pressing moderately hard; comb the colour while wet, and allow it to get perfectly dry; then with a camel-hair pencil dipped in clear water, put in the veins. Allow the work to remain a few seconds till the water has dissolved the gum Arabic, and then beat the veins out with a dry duster or cloth in a downward direction. After this use the flat overgraining brush, and pass over the work with a thin glaze of Turkey umber, ground in ale. Should the veins not beat out sufficiently clear, add a little more gum to the colour, but care must be taken not

to put too much, as the work would be likely to crack.*

POLLARD OAK IN DISTEMPER.

The ground colour is prepared with a mixture of chrome yellow, vermilion, and white lead, to a rich buff. The graining colours are Vandyke brown and small portions of raw and burnt sienna and lake, ground in ale or beer. Fill a large tool with colour, spread even the surface to be grained, and soften with the badger-hair brush. Take a moistened sponge between the thumb and finger, and dapple round and round in kind of knobs, then soften very lightly, and draw a softener from one set of knobs to the other while wet, to form a multiplicity of grains, and finish the knots with a hair pencil, in some places in thicker clusters than others. When dry, put the top grain on in a variety of directions, and apply a coat of turpentine and gold size mixed. When this is dry, glaze up with Vandyke brown mixed in beer.

POLLARD OAK IN OIL.

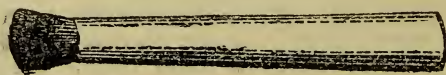
The ground is a rich buff, prepared the same as for pollard oak in distemper. The graining colours are equal portions of burnt Turkey umber, or Vandyke brown, and raw sienna, ground separately in boiled oil very stiff; then mix them together, and thin the whole with spirit of turpentine. With a large sash tool rub a thin coat on the panel, and, while wet, take the flat graining brush, containing a thin row of hairs, dip it into the colour, and in a spirited manner dapple in various directions; then dip the brush into the burnt umber, which has been made quite thin with

* It ought to be stated, perhaps, that this and the preceding method of distemper graining have little more than age to recommend them. These methods were adopted by the earliest grainers, and they are inserted here rather to show by what simple means oak may be imitated than for any specific value **they** possess in themselves.

spirit of turpentine, and form a series of knots. When the colours are set, take the same flat brush, dip it into a thin glaze of burnt umber, and put the grain on in a curly direction. Care must be taken to have a sufficient quantity of oil in the colours to bind them, and to finish but a small part of the surface at once, in order to keep it moist. The work should be carefully blended with a softener. For making the knots a cork is of great service. It should be held on to a patch of the dark colour, and twisted round between the thumb and finger. The heart or sappy portions of the wood should be taken out with a graining fitch, and should be in keeping with the knots, spreading from one to the other.

BIRD'S EYE MAPLE.

The graining colour is equal parts of burnt umber and raw sienna mixed in ale to the proper consistency. Spread the surface of the work with this colour, and, having some of the same prepared a little thicker, immediately take a sash tool or sponge, and put on the dark shades ; then mottle freely, and soften with the badger-hair brush. Before the colour is dry, put on the eyes by dabbing the tops of the fingers on the work. When dry, put on the top grain with a camel-hair pencil in the prominent parts, to imitate the small hearts of the wood, and shade underneath the eyes with a sharp touch of burnt sienna. Instead of using the tops of the fingers for forming the eyes, some grainers prefer to do it with a short camel-hair brush, called a "maple eye dotter," made expressly for the purpose. A cut of the dotter is appended, as also is one of a hog-hair maple shader, very useful for shading the eyes, and much esteemed by some of the principal grainers :—

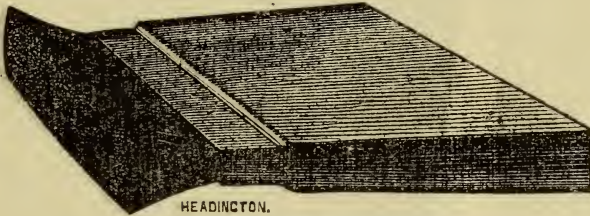


CAMEL-HAIR DOTTER.

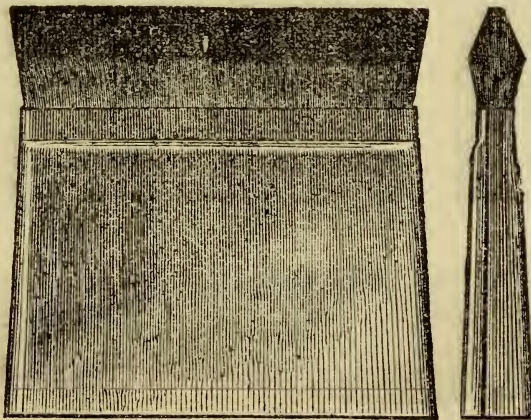


MAPLE EYE SHADER.

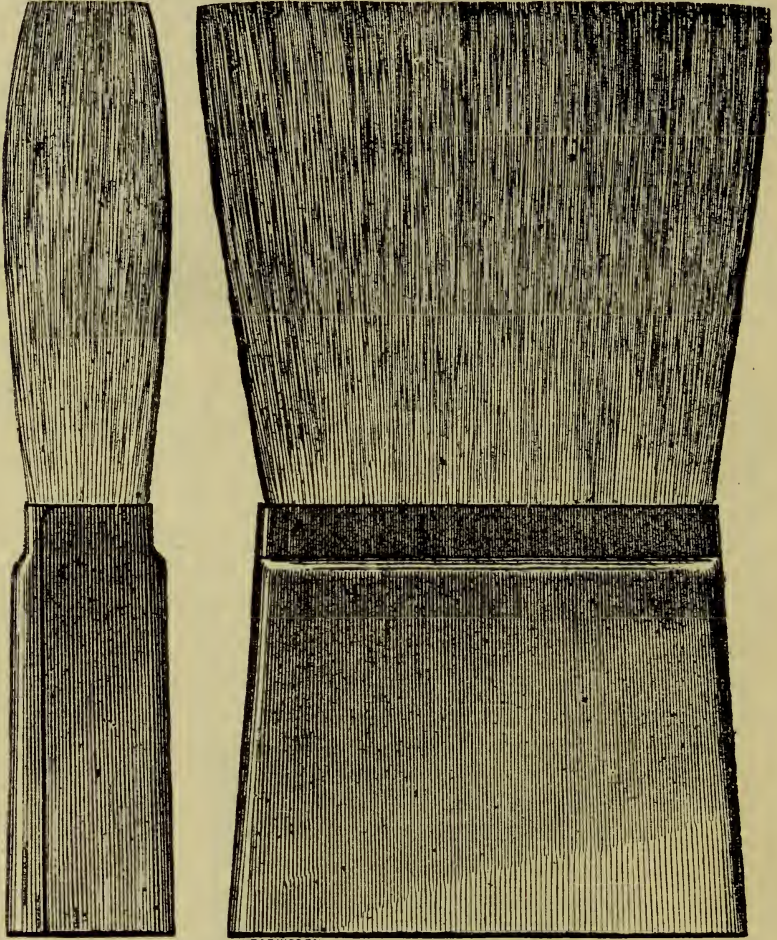
The mottlers used for mouldings in imitation of maple are generally made of camel-hair, and are of various widths, the hair being somewhat short. The subjoined illustration represents a camel-hair mottler :—

HEADINGTON.
CAMEL-HAIR MOTTLER.

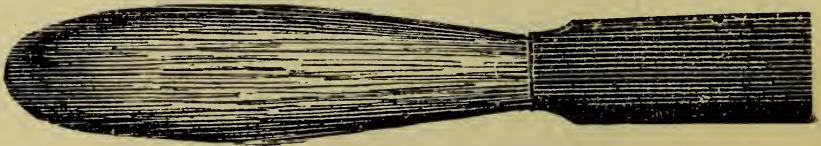
Another kind of mottler, greatly prized by some grainers, may be procured of Messrs. Brodie & Middleton, and is called the "burnt-edge camel-hair mottler," the object being to present at the outset an article that possesses all the characteristics of a mottler that has been "worked in," or brought to a state of excellence by being used, some grainers having a decided objection to a new mottler. The "burnt-edged" article is shown by the following engraving, representing the front and side view :—

HEADINGTON.
BURNT-EDGE CAMEL-HAIR MOTTLER.

The broad mottlers for forming the wavy dapple on the styles and panels are made of hog-hair, of various thicknesses, and are rendered wavy by pressing the tops of the fingers against the hair as the brush is



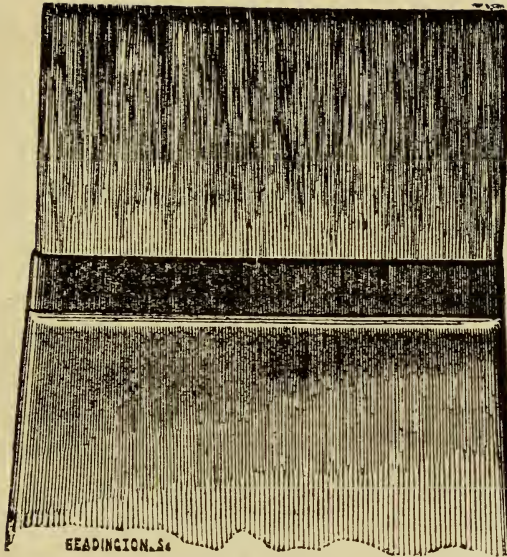
HEADINGTON
HOG-HAIR MOTTLER, EXTRA THICK.



DOUBLE THICK.



SINGLE THICK.

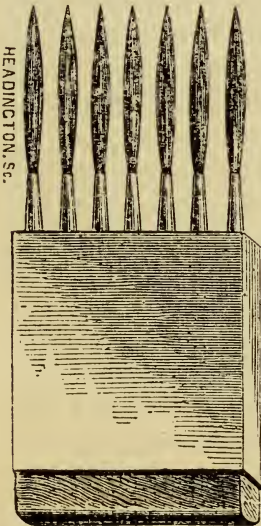


THIN HOG-HAIR MOTTLER.



applied to the work. These mottlers vary in width as well as thickness, and all the leading grainers make an assortment according to taste and fancy.

The maple overgrainers also differ from those used for oak, inasmuch as the markings of the wood are more regular, and require a series of faint parallel lines. For making these markings sable tube overgrainers are used, an example of which is attached. A thin flat hog-hair overgrainer, the hair being separated by a comb, is used by some grainers. The graceful flow of lines forming the heart of the wood must,



SABLE TUBE OVERGRAINER.

HEADINGTON, SC.

whichever kind of overgrainer is employed, be put on with a single camel or sable pencil, and the lines running parallel to the outer form of the heart must alone be formed with the overgrainer.

ANOTHER MAPLE.

The graining colours are equal quantities of raw and burnt sienna, ground in water and diluted with ale. Fill a tool with the colour, and spread the surface evenly; then take a long piece of stout buff leather, cut to a straight edge, and by holding it at each end press the edge hard against the work, draw the leather down, and it will leave the lights and shades. This is a good method of effecting the mottle. Soften, and, when dry, top grain with a camel-hair pencil for the small fine heart, and use the sable tube overgrainer to fill up the styles and panels.

MAPLE IN OIL, FOR OUTSIDE WORK.

For the graining colour, grind equal parts of raw sienna and umber with a small quantity of patent dryers, and thin with boiled oil; then fill a tool, and spread the surface evenly, and rub out the lights with the sharp edge of a piece of buff leather, which must now and then be wiped to keep it clean. Soften the edges of the work very lightly, and, when dry, put on the top grain with burnt umber and raw sienna ground in ale. This method was formerly very common, but is now almost superseded by the ordinary distemper graining.

SATIN WOOD.

The graining colour is one-third of raw sienna and whiting, ground in pale ale very thin. Spread the colour over the surface to be grained. While wet soften, and have ready a mottling brush, in order to take out the lights; blend the whole with the badger-

hair brush. When the work is dry, take the flat overgraining brush, and with the same colour put on the top grain.

ANOTHER.

The graining colours are equal quantities of raw sienna and raw umber, with a little burnt sienna, and a very small portion of whiting ground in beer. Spread the colour even over the surface of the work, and soften ; then mottle and form the feather as in mahogany. Soften, and, when dry, top grain with the same colour.

MAHOGANY.

Mahogany is always imitated with distemper colours. Vandyke brown and burnt sienna are used for this purpose. Spread the surface to be grained with an admixture of these colours ground in beer, take a camel-hair mottler, as shewn in the illustrations on page 83, and mottle the wet colour in different directions, then soften with a badger-hair softener. When this is dry, overgrain with Vandyke brown, using for this purpose a thin flat hog-hair overgrainer, the hair of which should be parted at irregular intervals, by means of a comb made specially for the purpose. Soften carefully, so as not to disturb the under colour.

ANOTHER MAHOGANY.

The graining colour is Vandyke brown and a little crimson lake, ground in ale. After the ground is dry, and made smooth, spread a thick coat on the surface to be grained, and soften with the badger-hair brush ; take out the lights on each side, while wet, and form the feather which runs up the centre of the tree. Blend the whole together with the badger-hair brush till the work appears very soft. Top grain, as before recommended, the grain crossing the feather in the centre and running downwards at the sides.

ROSEWOOD.

The ground is a bright red, made with vermilion, chrome yellow, and white lead. For the graining colours use burnt sienna and ivory black ground very fine ; mix them together, and with the tool well cover the surface of the work, then wipe it with the softener, to form the small speckled grain. When dry, take a small flat graining brush, well filled with ivory black, and put on the top grain in a curly form. Glaze with rose pink, and with a camel-hair pencil touch round the knots and the dark parts of the work, by which means transparency will be obtained.

YEW TREE.

The ground is a reddish buff. For the graining colour, grind in ale equal portions of Vandyke brown and burnt sienna with a small quantity of raw sienna. When the ground is dry, spread the surface evenly with the colour, and soften ; then, with a piece of cork with a sharp edge, rub the work cross and cross, in order to form the fine grain as in curled maple, and soften the same way of the grain. When dry, dip the tips of your fingers in the graining colour, and dab them on the work, to form the eyes or knots, and put in the small touches underneath with a camel-hair pencil. When dry, put on the top grain.

HAIR WOOD.

For the ground colour, take white lead and thin it with turpentine, and slightly stain it with equal quantities of Prussian blue and black. For the graining colour prepare in ale a mixture of Prussian blue and raw sienna. When the ground is dry, spread a transparent coat of the graining colour on the surface of the work, and soften ; then with a mottler cross the work to form the fine long grain or mottle. When

this is done, soften and top grain in a wavy but perpendicular direction.

HAIR WOOD FOR CHAIRS.

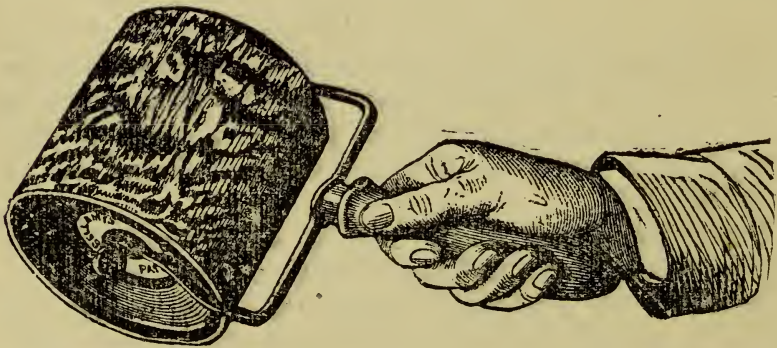
Paint the chair a light grey, by mixing a little Prussian blue with white lead, ground very stiff in boiled oil, and thinned with turpentine to the consistency required. When this is dry, take some of the ground colour, made considerably thinner with turpentine, and with a common paint brush put a very light coat on only a small part of the work at once, as the grain must be laid on before the paint sets, otherwise the colours will not blend. Having provided some thicker colour, made darker by adding more Prussian blue, take a feather, dip it into the colour, and put on the fine long vein cross ways, similar to the grain of curled maple. When the work is thus far finished, take a small flat graining brush, and put on the top grain with the same colour. If a green colour is desired, substitute mineral green for Prussian blue, both for the ground and graining colour.

There are other kinds of wood imitated with more or less success by the grainer, but it is impossible to even indicate the methods adopted in a work of this kind, where coloured illustrations are found to be impracticable.

Before passing from the subject of the imitation of woods, we should not have performed our duty satisfactorily if we omitted to mention that, within the past few years, various mechanical aids have been introduced to facilitate the operation of graining. Of course graining does to a certain extent admit of the application of contrivances more or less mechanical in its performance. The grains of wood have certain distinguishing characteristics which admit of their

being imitated by set patterns, and it is in consequence of these set patterns that certain ingenious minds have discovered a means whereby the labour of graining may be somewhat diminished, and the young or inexperienced grainer to a certain extent assisted. It must be confessed, however, that the appliances introduced and having these objects in view will never, for obvious reasons, supersede the art of graining by hand—for graining, to be successful, must be more than the result of mere mechanism; it must be a product of the mind, and if its execution does not necessitate any high order of attainments, it should certainly be characterised by some amount of artistic knowledge and refinement.

The Patent Graining Tools—for it is to them we refer—seem to have found their way to the grainer's workshop, and may here be described. The graining roller consists of a frame and revolving cylinder, the figure of the wood to be represented being cut on the surface of the cylinder, the outer surface of which consists of thick leather. The following shows the method of using the rollers:—



A workman, who nas had some practical experience of these rollers, writes—

“The leather of which the rollers are made is thick hide, prepared for the purpose in a certain manner.

On one side of these the pattern is sketched, and then the ground is cut away to a certain depth, just as a block cutter would do for printing. In some cases the strip of leather is made fast to the roller, and only just covers it; in other cases the leather will be three or four times the circumference of the roller, and of course these are only secured at one end. This roller is simply a metal cylinder with a centre pin or axle, upon which a handle is fixed; they are made of all sizes and widths, according to the wood to be represented. The *modus operandi* is as follows:—The graining colour, which is mixed with weak beer, (*i. e.*, distemper colour) is brushed over the work to be grained, and, while it is wet, the roller—which has previously been dampened with a wet chamois leather—is passed over it, and as the roller passes along it takes up the colour in patches of the exact shape of the pattern on the roller used. This may then be softened with the badger's-hair softener, and overgrained. It will be evident that this method of machine graining can have but a limited application on woodwork, inasmuch as however much work may be done with such a machine, each part will be merely a repetition of the pattern upon the roller."

In respect to the constant repetition here spoken of, the intelligent workman can vary the patterns almost indefinitely by a judicious use of different sized rollers; and, indeed, instead of a monotonous repetition of patterns, the work may be varied to an almost unlimited extent by reversing the action of the rollers, and by applying them piecemeal instead of in a continuous unbroken direction. In oak figure, and especially in the heart of the wood, there is, no doubt, a difficulty in varying the pattern to any great extent, but even here the experienced eye of an ingenious operator will readily perceive where the work may receive a few touches in order to break the monotony of constant repetition and prevent anything like me-

chanical effect. For mahogany, maple, and satinwood mottle, the rollers are most serviceable, as the mottling can be varied to any extent without the least semblance of wearisomeness engendered by sameness of workmanship. The readiness and facility with which the ground can be got over by means of the rollers is astonishing to any one who has had no experience of using the rollers. Many masters in London who have immense quantities of graining to execute, and often in a remarkably short space of time, prefer these mechanical aids to hand graining, and work that has been performed by these instruments can certainly vie with that produced by the leading grainers.

The same writer, who, being "An Experienced Workman," has a natural aversion to anything at all calculated to interfere with the trade, admits that—"The mottle of satinwood, mahogany, Hungarian ash, and birch is very fairly imitated by these rollers, and also the beautiful feathers or curls in Spanish mahogany and satinwood. The mottle of these woods has very little variety, that is to say that the mottle of mahogany and satinwood is, as a rule, so much alike, not as two separate woods alone, but of different pieces of the same wood and tree, that one or two patterns suffice for all; and so this class of woods is peculiarly suitable for adaptation to these machines."

The method of proceeding to grain with the rollers may be thus explained:—

For imitating MAHOGANY, SATINWOOD, MAPLE, and BIRCH, proceed with an ordinary paint tool, and lay the colour (mixed with beer in the usual way) on the space to be grained; while the colour is wet pass the roller over it, and the desired figures will be produced. It then requires softening with a badger-hair softener, and overgraining with a fine hog-hair overgrainer, the hair of which should be separated with a horn comb, or by means of the fingers.

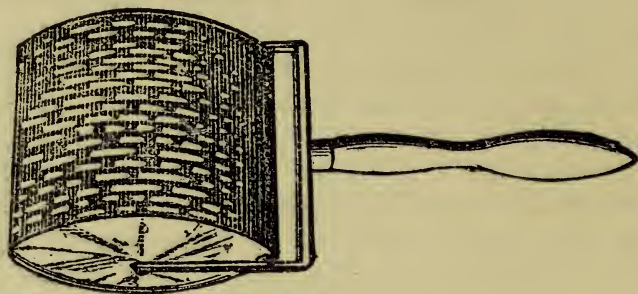
In graining mahogany, satinwood, and maple, the roller should occasionally be passed twice over the same place, and in some parts plain spaces left, so as to prevent a repetition of patterns occurring. The maple eyes are put in by hand in the usual way.

It is not necessary that the colour should be laid on thoroughly even for the above woods. Before the overgraining is proceeded with, the graining should be coated with a mixture of turpentine, gold size, and a little varnish in order to bind it, so that the colour may not be removed by the overgraining.

In the imitation of OAK, the colour should be laid on as regular as possible, and combed as in ordinary work with a steel or leather comb, a little common flour paste being added to the water-colour, to enable it to stand the comb. The roller should now be passed over it, and the badger once passed over in the same direction as the combing, which will produce a dark shade under the veins and give a very natural effect. The large veins may be softened (if desired) with a piece of cloth, either before or after the colour is dry. It now requires overgraining, the same as described for mahogany, &c., the application of the mixture of gold size, varnish, and turpentine, not being forgotten.

There are special rollers made to form the bates or pores of oak, called "Overcombing Rollers," and the work executed with these machines is exceedingly soft and natural. It is difficult, in a letterpress description, to give an adequate idea of the perfection with which the thick bates and pores of oak may be imitated by means of these rollers, which are made of strips of leather, so placed that at short intervals the broad sunk grain of the wood is imitated with a naturalness and facility quite beyond the reach of the ordinary method of graining by hand. A judicious employment of the "overcombing roller" produces a marvellous effect, the result often puzzling those who

are adept hand-grainers. A cut of the "overcombing roller" is appended :—



In order to obviate the difficulty which arises from the larger rollers being unable to touch the tops and bottoms of deeply sunk panels, an arc or section of a roller has been introduced, by which the pattern may be formed quite contiguous to the mouldings, the hand-graining which was formerly necessary to complete the pattern being no longer necessary. These sections of rollers seem to perfect the mechanical aids to graining.

A few square cakes of vulcanised indiarubber, knotted so as to form coarse teeth, are useful for effecting coarse combing, suitable mainly for styles.

The utmost care should be exercised in keeping the rollers thoroughly clean, and to prevent them coming in contact with oil or any greasy substance, which would stop the pores and prevent the necessary suction.

In commencing work, wet the rollers thoroughly with a sponge and water, and rub them with a wash-leather or dry cloth, so as to remove any water remaining on the surface. They will now be thoroughly moistened and be ready for working. During the process of using the rollers it is advisable to have a piece of washleather at hand, in order that, the rollers being passed over it at frequent intervals, they

may be kept perfectly clean and prevented from clogging or working dirty through the accumulation of colour. When they have been done with for the day, they should be thoroughly cleansed with a brush and water and left to dry gradually—and not dried before the fire, or they would be liable to crack. It may be mentioned that we have known the rollers to be in almost constant use for a couple of years without the slightest injury.

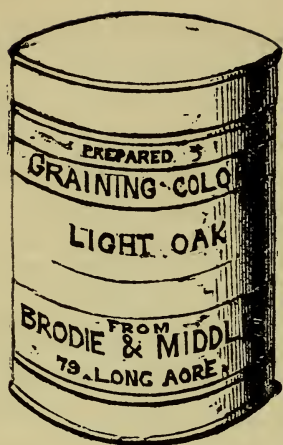
It may not be generally known that the patent graining rollers are also applicable to the imitation of certain kinds of marble, but they may be used with good effect for the following purposes:—

JASPER MARBLE.—The ground to be a flat white, damp the surface with beer, and while wet, shade about two-thirds of the space with red colour, leaving some places very transparent; lay in the remaining spaces with a dirty yellow, observing also to keep the colour very thin in parts, and blend with a badger. When dry, a few white veins may be added with a feather in oil-colour.

ROUGE ROYAL.—Same as jasper, omitting yellow, and the red to have a little umber mixed with it.

SIENNA MARBLE.—Ground same as above, shade it all over with yellow colour in oil, keeping it very light in parts, add a few very slight shades in Indian red. In this case the roller to be charged with black, by passing it over a board on which some dropblack, mixed in raw oil and turps (very thin) is brushed. Roll the work and soften with a badger. A few white veins may be added as in jasper.

VEIN—For black vein and Italian pink.—This is executed in oil-colour, and the work produced is of a very superior class. The roller is most simple in application. Paint the surface white, and while wet pass the roller over, it being charged as for sienna. The white paint to be composed of white lead, dryers, and equal parts of turpentine and raw oil.



In order to facilitate the use of the rollers, the following graining colours, ground in water, prepared thick ready for use, and only requiring thinning, have been prepared, and are procurable of Messrs. Brodie & Middleton and other colour manufacturers:—

LIGHT OAK.—Thin in beer and add a little flour paste; about a quarter of a pound of colour is sufficient for one quart of thinnings, overgrain with same and a little black. *Ground Colour.*—White stained, with equal proportions of burnt and raw Oxford ochres.

DARK OAK.—About half a pound of colour to one quart of thinnings; overgrain same as light. *Ground Colour.*—Same as light, adding burnt or dry Turkey umber.

LIGHT MAHOGANY.—Quarter of a pound of colour to one quart of thinnings; overgrain with mahogany lake. *Ground Colour.*—Equal parts of Venetian red and middle chrome, adding a little white.

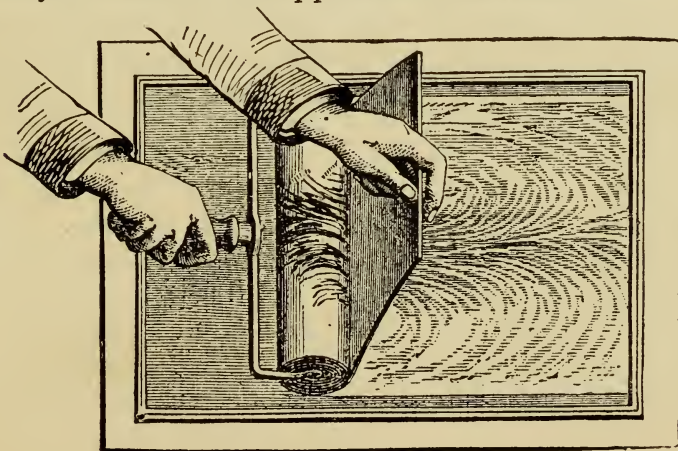
DARK MAHOGANY.—Same as light. *Ground Colour.*—Same as light, omitting white.

MAPLE.—The same as mahogany, but used very thin; overgrain with one part graining colour and three parts burnt sienna. *Ground Colour.*—White stained, with burnt native ochre, as nearly white as possible.

SATINWOOD.—Use very thin as in maple; overgrain with same, adding a little burnt sienna. *Ground Colour.*—Same as maple.

Although it may be perfectly true that an experienced workman would rather dispense with any adventitious mechanical aids in the performance of his work, still, in the hands of the amateur, who has not sufficient practice to make him thoroughly pro-

ficient, the graining rollers may be a useful acquisition, and enable him to execute work better than he could possibly perform it without their assistance. To country workmen, who are sometimes called upon to execute all kinds of work, from the soldering of a gas pipe, or the repair of a pump, to writing a tradesman's name and graining his shop-front, and who cannot be expected to know a great deal of the finer branches of his calling, these graining rollers are an immense assistance ; and so long as they ensure the performance of better work than could be executed without them, their claim to consideration must not be despised. For practical and skilled grainers to write as if everybody had attained, or ought to attain, to their standard of excellence is all very well in its way, but those who make graining a subordinate part of their labours, and only have occasion now and then to follow it as a matter of business rather than as a study, will undoubtedly find the mechanical appliances introduced of late years of great service to them. It may be added that the rollers are made of a great variety of sizes, so that they are adapted to almost every kind of work. We append a diagram of one of Bellamy's patent graining rollers, for forming the mahogany and satinwood feather, showing the way in which it is applied to the work :—



These rollers are made, as we have said, in a great variety of sizes and patterns, and are applicable to the imitation either wholly or in part of the following grains of woods and veins of marbles :—

SPANISH MAHOGANY AND	BIRCH MOTTLES
SATINWOOD MOTTLES	„ HEART OVERGRAIN
SPANISH HEART OVER-	TULIP
GRAIN	HUNGARIAN ASH
SPANISH FEATHERS	HAIR WOOD
MAPLE MOTTLES	JASPER MARBLE
OAK LIGHT VEINS	ROUGE ROYAL MARBLE
„ DARK VEINS	VEIN MARBLE FOR WHITE,
„ HEARTS	DOVE, SIENNA, BLACK
„ KNOTTED AND POL-	AND GOLD, AND ITA-
LARD	LIAN PINK
WALNUT	

We now pass on from the imitation of woods to that of marbles, commencing with

ORIENTAL VERDANTIQUE MARBLE.

The ground should be black in oil paint, and made quite smooth. For the graining colour, take white lead in oil, and made quite fluid in spirit of turpentine. This should be laid on with a common sash tool, in broad transparent veins, so thin in places that the white is scarcely perceptible, and in other places nearly opaque. While the white is wet take a piece of wash leather, and dab it on in different parts of the work, leaving it in the form of shells or other fossil remains. While the colour is still wet take a square piece of cork, and, notching it in two or three places, turn it round on the work between the thumb and finger. This will leave the circles more natural than it could be done with a pencil. Then get a feather, and cut it in notches, and having dipped it in

the white at unequal distances, pass it over the work in a zigzag manner, to make the irregular veins on the black ground, and by suddenly checking the hand make it take an angular direction, so as to vary the veins. When the work is sufficiently veined, let it remain till it gets dry. When dry it must be glazed with different tints of green—in some places with raw sienna, and in others with Prussian blue, leaving some parts black and white. Then, when this is dry, wash the work with beer; and take a feather and dip it into whiting ground fine in beer, and with it draw the fine veins; a few fine lines with a camel-hair pencil may also be made to curl over the light parts with emerald green. When dry, it will be ready for the last glaze, which should be made of raw sienna and a small portion of Prussian blue, mixed together in equal parts of boiled oil and turpentine. This should be passed over the greater part of the work, which will have the appearance of a beautiful green; but certain patches should be left black, and some of the white veins should not be glazed.

It may be observed that verdantique, Egyptian, malachite, and serpentine are the principal green marbles, and are most varied in their colours. These may all be produced in a similar manner to the verdantique; but it will be advisable for the learner to procure some specimens of the different kinds of green marbles, and not attempt to imitate what he has never seen.

VERDANTIQUE.

This is an easy, and also a very excellent method of imitating this species of marble, and will be found very useful to the cabinet maker, as it is well adapted for the tops of tables, sideboards, washstands, &c. If the work is new it may have one coat of dark lead colour in oil paint, and when dry it should be made

smooth with fine glass paper, and a coat of black applied. When the ground is dry, commence by laying on white lead finely ground in water and mixed with a small quantity of beer, in order to bind and prevent its absorbing the varnish. The work must not be entirely covered with the white, which should be laid on in large streaks with a sash tool; having previously prepared some lampblack finely ground in beer, with another sash tool fill up the spaces which are left by the white, thereby covering the whole surface of the work; then with the badger-hair brush soften the whole together while it is still wet, in order to make the veins run imperceptibly into each other. The whole of the work should be covered in this way at once; then take a large hair pencil and dip it into the white, and on the darkest parts of the work dab the white carelessly, in spots of various sizes and forms, in order to represent the fossil remains. Take another pencil, dip it into the black, and go over the lightest parts of the work in the same manner. The flat graining brush, containing a very thin row of hairs, or a feather, should then be dipped into the white and drawn over the black, in order to form the small irregular veins. A dark blue vein may be made to run across the work; this should be put on in a wavy, zigzag direction. When the work is perfectly dry, in order to give it the green shade, it must have a thin glaze of Prussian blue and raw sienna, the latter preponderating, and in some places a little emerald green should be used. The glazing colours may be ground in spirit of turpentine and mixed in copal varnish.

JASPER MARBLE.

The ground is mixed the same as for mahogany, with Venetian red, red lead, and a little chrome yellow, ground and thinned with equal parts of oil and turpentine; to increase the brilliancy of the

colour, substitute vermilion or lake for the Venetian red ; then dab on spots of white paint with a piece of sponge while the ground is wet, and blend the colours with a softener or duster, and apply a little more white in the same manner. Blue, brown, or yellow may be thrown in the same way, and blended altogether. When nearly dry, take a hair pencil and form the large and small veins and threads ; this latter part may be omitted or not, according to the taste of the workman. This kind of marble may also be executed on a white ground, and distemper colours applied with sash tools and pencils.

PORPHYRY MARBLE.

The ground is purple brown and rose pink. The graining colours are vermilion and white lead, ground separately in turpentine and a little gold size added to each colour to bind it. More turpentine must be added before the colour is applied. When the ground is quite dry, fill a large brush with vermilion, discharge nearly all the colour by scraping the brush on the edge of a palette knife ; then, holding a rod of iron in the left hand, strike the handle of the brush against it, letting the small red spots fall on the work till the surface is covered—or, what is preferable to it, a patent graniting machine, which will do the spotting somewhat cleaner. Make the colour a lighter shade by adding an equal quantity of white lead, and use it as before. Then, with some clear thin white throw on the colour the last time in very fine spots, and when dry put in a few white veins across the work. This kind of marble may be successfully imitated in distemper, which is preferable for inside work. The process is precisely the same as in oil. By this method the work is executed with greater expedition, as it may be varnished at once. It is necessary in the imitation of this marble to procure some sheets of paper, to place at the extent of

the surface to be grained, in order to receive the superfluous spots.

ANOTHER METHOD.

The ground is prepared with Venetian red, heightened with a little Vermilion and white. For the marbling colour, add a little more white to the ground colour, and sprinkle the first layer in the same manner as in the last. When this coat is dry, the sprinkling may be repeated very sparingly, and in some parts more than others, with a mixture of Venetian red and vermilion. Sprinkle the last time with white in very fine spots. Form some opaque white veins across the work among the spots, from which transparent threads must be drawn in various directions. This cannot be done till the whole of the work is quite dry and hard, when it may be performed with a sable pencil, and the threads drawn out with a feather. If due care be taken in sprinkling, the imitation will be excellent. For the application of each colour, a different brush will be required.

GRANITE.

There are a great variety of granites, ranging from bright red to salmon, grey, and drab. Some marblers prefer to splash on the spots by striking a common tool against a stick held in the left hand; others use a graniting machine, while for several kinds of granite a piece of sponge or a feather is charged with colour and dabbed against the work.

For a salmon marble the ground should be Venetian red and white, and the spots black, white, and vermilion.

A grey ground with black and white spots will assume a very natural appearance if skilfully applied. The beginner should procure pieces of real granite, and a few trials will suggest the readiest methods of imitating them.

BLACK AND GOLD MARBLE.

The ground should be a deep black, ivory black being preferable to any other. The veins are put on with a camel-hair pencil, the colours used being white lead, yellow ochre, and burnt and raw sienna. The interstices between the veins should be scumbled in with a grey or white, thinned so as to be a mere glaze over the black ground. This latter method will add transparency to the work. A few fine white veins should be passed over different portions of the grey, and the effect will be very natural.

The veins are occasionally put on with gold leaf, but this is a purely artificial mode of procedure.

Some marblers prefer to work upon a yellowish ground, the method adopted in this case being to put on the black with fitches of different sizes, leaving the broad yellow veins. The fine veins are obtained by drawing a piece of pointed stick across the black whilst it is wet. Very excellent imitations may be obtained by this means.

SIENNA MARBLE.

The ground should be made with Oxford ochre and white lead. The marbling colours are burnt and raw sienna, white, black, and a little lake. These colours should be laid on as a transparent glaze, and the whole marked and blended while wet. Veins and irregular patches are the characteristics of this marble; and if the colours are properly softened with a badger, the work will present an extremely fine appearance.

ANOTHER METHOD.

The ground is yellow ochre or raw sienna. When the ground is dry, mix some raw sienna with white lead, have ready some white paint, and with these two colours used separately, put in some broad transparent tints of white and yellow, and while wet blend them

together with a softener. Take some Venetian red and a little black mixed with it, and with a hair pencil put in some broad veins in the same direction as the patchy tints run; then for the darker veins take a mixture of Venetian red, lake, and black, and with a feather draw them over the first layer of veins in fine threads, running to a centre, and then striking out again in fine transparent veins in different directions. When this is done, mix Prussian blue and lake, and with a fine pencil put in the darkest and finest veins over those previously laid on. Put in a few dark touches of burnt sienna between the fine veins, which are formed into small masses. If the first shades are not sufficiently varied, a thin and separate glaze of burnt and raw sienna may be applied in different parts of the work. All the colours should be ground in spirit of turpentine and used with sufficient gold size to bind them.

DOVE MARBLE.

The ground is a lead colour. If the work is new, it will be necessary to give it two or three coats of ground colour, which must be made to dry hard, taking care to rub it smooth with fine glass paper after each coat, and not to rub the paint off the sharp edges of the wood. For the marbling, take some of the lead colour, such as used for the ground, and make it thin with turpentine, and rub a light coat over a small part of the work; then take a small graniting machine, with a whitish color to form the small specks or other fossil remains. Proceed in the same way, piece by piece, till the whole surface is covered, taking the precaution to paint but a small part of the ground at once, that the colours may have sufficient time to blend together while wet, otherwise the work will appear harsh. Then take some of the thin ground colour, and with a fitch or small sash tool, put in the faint, broad veins, and also a multi-

plicity of very fine veins over the whole surface of the work, crossing each other in every direction. When this is done, make the colour a few tints lighter, by adding white lead, and with a feather dipped in the colour, pass over the broad veins in the same direction, forming streams of threads. Next take some thin white, and with a camel hair pencil go partly over the same vein with short, thick touches, then with a fine striping pencil. When the work is hard, it should be made smooth with very fine glass paper before being varnished. The first layer of veins should be exceedingly faint, so much so that they are scarcely perceptible; for, as the lighter shades are put on, the former veins will appear sunk from the surface of the work, which will give an admirable effect for chimney pieces, table tops, wash-stands, &c., where the work is exposed to close inspection.

BLUE AND GOLD MARBLE.

For the ground prepare a light blue, and when this is dry, take blue with a small piece of white lead and some Prussian blue, and dab on the ground in patches, leaving portions of the ground to show between. Blend the edges together with a softener; afterwards, put on some white veins in every direction, leaving large open spaces to be filled up with a pale yellow or gold paint. Finish with some fine white irregular threads.

ITALIAN MARBLE.

This looks bold, and is well adapted for large columns and pilasters, and is easy to imitate. The ground is a light buff. For the marbling colours, prepare a rich warm buff, made in the following manner:—Mix stiff in boiled oil white lead and good Oxford ochre, and tinge with vermilion; grind some burnt sienna very fine in boiled oil, and put it into another pot; mix some pure white stiff in oil, and

keep this also separate. Thin these colours with turpentine, and have ready a brush for the buff, and another for the sienna. Take the brush intended for the buff moderately full of color, and dab it on freely and carefully in different patches, some of them larger than others, and varying them as much as possible. When these are laid on, take the other brush and fill in with the sienna the spaces between. As soon as this is done, take a softener and blend the edges together, making them appear as soft as possible. Proceed in this manner till the whole is covered. Then with a hair pencil draw a few thin white veins over the work, varying them as much as is necessary; take another pencil for the sienna, and run a few thin lines intermixing the whole, and soften with a badger.

BLACK AND WHITE MARBLE.

A white ground, and then dark veins may be put on with a marbling crayon and carefully softened while the ground is wet. Or, when the ground is dry, let a thin coat of white lead be passed over the work, and the veins put in with a camel hair pencil, and blended while wet. This marble is very easily imitated.

SIGN WRITING.

THE great essential in Sign Writing is the acquisition of facility of hand, and correctness of outline in forming the essential lines, which, in combination, compose the alphabetic characters. In a work of this kind it is not expedient to give the absolute forms of all the letters of the alphabet, of which there are several classes—such as Roman, Italic, Sanseriff, Egyptian, Ornamental, &c. It might at first be imagined that all writers would give the letters of these various alphabets the same outline; but such is not the case, every one having a style more or less peculiar to himself. This may seem a strange assertion to the unobservant, but it is true nevertheless. Those accustomed to the styles of the different writers of the metropolis, or of any large provincial town, are able, by a mere glance at the lettering produced, to tell off-hand by whom it was executed, even though they may not have seen the work during its progress. For this reason, the learner is not recommended to copy exactly any individual's peculiar style of forming the alphabets of various kinds; but he should select from the best models he can find either in typography or on the walls or sign-boards. As a rule, closely copying printed letters is not advisable. These are often very indifferent models for the sign-writer. It is but right, however, to remark that of late years type-founders have greatly improved their style, especially wood letter-cutters, and many of their alphabets are by no means to be discarded as

unworthy of imitation. The taste and judgment must be consulted in this matter; and, by following what these dictate as the best forms for grace and symmetry, the beginner will soon acquire a style of his own quite as individual as that of his hand-writing.

The first thing to be done by way of practice is to "snap" a chalk-line on the surface on which the letters have to be made. It should be stated that, though the use of any sort of measurement in regard to the letters themselves is to be deprecated, it is almost a necessity that some means should be adopted to keep the tops and bottoms of the letters in a direct line. It is, therefore, necessary to "snap" two chalk-lines of the height required for the letters.

In order to be able to make essential lines with ease and precision, the beginner is recommended to practice drawing them over and over again with a piece of soft or "free" chalk, or pipe-clay,* on a black board. As, practically, the sign-writer is called upon to exercise his calling on upright surfaces, it is important that the student should commence his practice on a board, resting on an easel, and slanting but very slightly, and never on the flat top of a table or bench. The straight or curved lines should be effected purely by free-hand drawing, without ruler or compasses, until the student has acquired the habit of rendering them with tolerable precision. The method of procedure should be varied occasionally by substituting for the pipe-clay a sable-hair pencil charged with oil colour, and when this is used the right arm must rest

* The best way to get the pipe-clay is to go to a maker of ordinary white clay-pipes; and, for a penny, the student will be able to purchase several sticks of well-formed crayon-looking material—in fact, pieces of the stems of pipes broken before being baked. This is a most serviceable article, and is almost invariably used by writers. It marks readily, without scratching the paint, and it has this great advantage over soft chalk, that it does not leave any traces of dust behind. Writer's crayons, for this purpose, are also to be had at the colour shops.

on a mahl-stick held in the left hand, and never upon the board itself. In using oil colour the paint should be rubbed off with a piece of rag before it has had time to dry, or it will be necessary to paint the board afresh after each day's practice.

In drawing straight and curved lines the use of ruler or compasses should be avoided. The chief object to be attained is freedom and command of hand; and this is only to be accomplished by practising without those mechanical aids, which, though indispensable to the architectural or engineering draughtsman, would only serve to retard the progress of the writer.

We have used the word "snap" in its technical sense, and it is necessary to explain it. To "snap a line" is to form it by means of a chalked cord drawn across a surface, and then snapped or flicked, so that the chalk is deposited, a faint line being thus secured. The method of snapping the chalk-line, simple as it is, is not unworthy of a little description. When there are two persons, one at each end of the board to be written upon, the line is easily made; but when, as often happens, the operator is alone, he will have to find a substitute for a second person. He must, therefore, provide himself with a finely-pointed awl, and make a small loop at the end of the cord or chalk-line. By inserting the awl through the loop, and pressing it into the board at the point where the line is required on the right hand side, the cord will be fixed securely at one end. It should then be held in the left hand, leaving the right at liberty to rub it with chalk, and to snap it when it is guided to the proper point and pulled tight by the left hand. This method is invariably adopted, owing to its simplicity and effectiveness. If the board be but three or four feet long, the cord, having previously been rubbed with a piece of chalk, can be held between the thumb and finger of each hand, and drawn tight across the

board in the direction in which the line is required ; and if a piece of cotton has been attached to the middle of the cord, the end being in the mouth and held between the teeth, a slight backward motion of the head sufficient to make a jerk will have the desired effect.

It sometimes happens that the writing is not required to be in a straight line, but on a curve, and this is frequently the case with the top line when more than one is required. When judiciously introduced, curved lines, in combination with direct lines, have a pleasing effect ; but a series of curves in different directions should be avoided ; for unless the writer has acquired proficiency in his art it will be a difficult task to arrange them in a satisfactory manner. The most common form of curved writing is that of an arc of a circle, or a scroll. The latter is invariably made by the hand without any guide, and it is by no means difficult of formation. If an arc of a circle is desired, a faint line should be drawn down the centre of the board, near the bottom of which the left hand should press the chalk-line, and, having inserted a piece of crayon or pencil through the loop, the right hand will be at liberty to describe the curve. Of course, the arc will vary just in proportion as the left hand is held higher or lower on the board. To form the second line the length of the cord must be taken in to the extent required, and the left hand must hold the cord to exactly the same point of contact as that from which the first line was described. Care should be taken that the right hand in guiding the crayon or pencil moves regularly and evenly round, or the arc will be imperfect, and nearer the top of the board on one side than the other.

Having made the chalk lines, the letters should be first lightly sketched out to ascertain whether they will come in evenly in the allotted length. The young writer will find this one of the most perplexing

things with which he will have to contend. Failure at the outset is almost inevitable. Sometimes he will reach the end of his space before he has half finished the number of letters he expected or thought to get in ; and then, perhaps, in his very next attempt, he will have exhausted his letters long before reaching the end of the space he intended to fill. Nothing looks much worse than writing when it happens to be "all on one side," as the expression goes. No matter how perfect the individual letters may be, if they are as a whole unevenly balanced, the result will be most disagreeable. Even those who are reputed to be skilled writers sometimes fail in this particular. It is no uncommon thing to see painted on a shop fascia, for instance, the shopkeeper's name and calling, and at one end only a fine flowing flourish, altogether out of place and superfluous, its obvious object being to balance the line and hide the writer's want of skill, instead of which it not unfrequently makes the matter worse, the reason of its introduction being so transparent. A really skilful and practised writer has no occasion to resort to such a subterfuge, for he will judge at once the exact height and proportion the letters ought to be to fill a given space. It is almost marvellous to what perfection some men have attained in this respect. No matter if the line be twenty or thirty feet long, they will set out the letters they have to write to such a nicety, that they will be within an inch or two at the most of the space they intended to occupy, and they will do this the first time, without repeated trials. Of course, the learner will be a long time before he can hope to attain this degree of certainty. He should not, however, relax in his efforts until he has attained some approach to it.

The preceding observations apply principally to the ordinary styles of lettering, which are most in use ; and, as these form the basis of the ornamental letters, they require to be perfectly mastered before

any approach to success can be expected, in the more difficult combinations which an expert will be required to produce. When the learner enters upon a study of ornamental writing, he must familiarise himself with the general principles of design; for, obviously, a good writer will not always rest content with copying the productions of others, however much they may have in them that is worthy of imitation; the great point for him to aim at is originality, and in this matter, the field is practically boundless, there being really no limit to the forms which may be given to the alphabetic characters.

At the outset, however, it is necessary to guard the beginner against an extravagant use of ornament. As a general rule, it should be simple rather than complex. And whatever style of embellishment be decided upon, care should be taken that it does not detract from the legibility of the lettering; for if it have this tendency, the result can scarcely be deemed satisfactory, as it must be borne in mind that the writing has to serve a practical purpose, to which, in the great majority of cases, the decorative accessories are merely subservient.

Then, again, it is of paramount importance that as regards design, the style of lettering, whatever form it may assume, should be harmonious. Paradoxical as it may sound, there must be unity in variety—that is, the variety in the parts must not destroy the unity of the whole. Each and all of the letters must be modelled on the same principle; and taste must be our guide in determining the suitableness of the ornament and the quantity which it is desirable to introduce. Want of harmony in style is unquestionably the most glaring fault of the modern sign-writer. Speaking upon this point, a great authority—Sir M. Digby Wyatt—remarks, with regard to the kindred subject of illuminating, that “there are few faults more common in modern work, or more offensive to

the educated eye, than the association of styles of lettering and styles of ornamentation warring with each other in the properties of both time and form." This remark applies with equal force to the art of the sign-writer.

Having thus in general terms indicated the method of procedure to be adopted in setting out the writing, we proceed in the next instance to subjoin a few hints on colouring, a correct knowledge of which is so essential to the success of the sign-writer.

HINTS ON COLOURING.

It is a prevalent error to consider that the arrangement of colours is a matter of fancy. Most persons know that there are three primary colours, and they think that these may be used in all sorts of capricious combinations. But it has been proved by the greatest scientific authorities that the phenomena of colours are regulated and governed by irrefragable laws of harmony in their combinations, and that they can no more be used upon any principle of haphazard than can the notes in a melody or other musical composition. What would be thought of a composer who should imagine that, by selecting a number of musical notes at random and arranging them consecutively, he would succeed in producing a piece of music that would delight the ear? And yet this is precisely what many people do in regard to colours. They place them in all sorts of whimsical juxtapositions, and when they have got a sort of badly arranged patchwork flatter themselves they have a refined taste and a good eye for colour.

Many writers and house painters are deficient in this respect, and others who have a good knowledge of the subject are placed in the position of having to pander to the tastes of their employers. A certain class of persons insist upon having their work done in exact accordance with some particular fancy of

their own, and the writer is obliged to comply, unless it be that for his own credit he abandons the work altogether, which course, however, is for obvious reasons but seldom adopted. To this fact, no doubt, may be attributed a great deal of the unsightly and inartistic writing which occasionally meets the eye. As a rule, an experienced sign-writer has some amount of good taste, and if left to himself will not execute anything positively offensive. He knows practically what effect a given combination of colours will produce, but if he is not permitted to have a voice in the matter it is no wonder that his work oftentimes will not bear critical inspection. This is to be regretted for the sake of his art generally, because it tends to keep it down to a lower level than it ought to occupy.

There are three *primary* colours—namely, yellow, red, and blue; these make the *secondaries*, which are orange, green, and purple; and then from these are derived the *tertiaries*, citron, russet, and olive. Orange is composed of yellow and red; green, of yellow and blue; and purple, of blue and red. Citron is a compound of orange and green; russet, of purple and orange; and olive, of purple and green.

Now these colours vary in “tint,” “shade,” and “hue,” terms which are often used indiscriminately even by persons who are in the constant habit of painting in some form or other. But these terms are perfectly distinct, and express different meanings, which it is proper should be clearly understood. Every compound of the three primary colours is a *hue*. For instance, green being composed of yellow and blue, may vary in hue from the yellowest to the bluest; a purple, which is a compound of blue and red, may vary in hue as one or other of these colours predominate; and an orange, a mixture of yellow and red, may vary from the yellowest to the reddest. A multiplicity of hues may thus be formed of two primaries. But a still greater number may be made

by a combination of the three primaries, which form the tertiaries, by subordinating or giving predominance to either of them. A colour may be changed in hue without any change taking place in its name. Thus, when we speak of a green, it may be any hue between blue and yellow ; or purple, whether it incline to red or blue, is still called purple ; similarly with regard to the tertiaries, the name of the colour is the same whichever of the primaries predominates.

If, now, we take either of the primaries, secondaries, or tertiaries, and reduce them in tone, with an admixture of white, we at once change the names of the colours, and get a *tint*. A red, for instance, may by the introduction of white, be made to vary in tint from its most intense state through every gradation up to white, changing its name to carnation, pink, salmon, and so forth, according as the red or white predominates. This applies not only to the primaries, but to the different hues, which, equally with the intense colours, are capable of every state of dilution up to white. It is evident, therefore, that the variety of tint is immensely greater than that of hue.

If we take a colour or hue in its intense state and introduce black, instead of a tint, we get a *shade*—for by shade is meant every gradation of a colour or hue from its original purity down to black. The shades, like the tints, have distinct names ; thus, if black be added to red, the result will be what is called a “chocolate,” and so on.

It is important to bear in mind that there can be no perfectly harmonious arrangements of colours from which either of the primary colours is absent ; just as in form, either structural or decorative, there can be no perfect composition or harmony unless there is a proper balancing of straight, inclined, and curved lines. There should in every arrangement be one leading colour, to which the others should play only a subordinate part. If bright and vivid colours are

used with discrimination, they add richness and grandeur ; but if they are applied without reference to place or quantity, they are apt to become gaudy and offensive. Harmony consists, therefore, in a proper balancing of the different parts, by keeping some colours in due subordination and giving predominance to others. In stating that the three primaries should be present, it is not intended to imply that they should all appear in full strength, because they may be diluted with white and used only as tints ; or they may be combined with black and be used merely as shades. In either case they serve to balance the arrangement, and cannot be omitted without detracting from the beauty of the work.

Of all the decorative arts, sign-writing is that, probably, which offers the widest scope for the use of intense colours. The ground on which the lettering is painted has a neutralising effect, because the space uncovered by the writing is generally so much greater than that covered. Consequently, however much the colours used for the letters and the ground may be antagonistic, the comparatively small limit of the one and the largeness of the other have a counterbalancing tendency, and the result is, practically, successful. This accounts for the great variety of colours that may be and often are introduced on a single board or other surface without any apparent harshness resulting from their combination.

METHOD OF PRACTICE.

Subjoined are a few hints on the method of practice generally followed by the sign-writer. The painted surface on which the writing has to be effected must be gently rubbed over with a piece of damp chamois leather or a wetted sponge, and carefully wiped dry, before the letters are set out. If this is neglected the colour will neither flow freely from the pencil nor adhere to the ground, but will display a tendency to

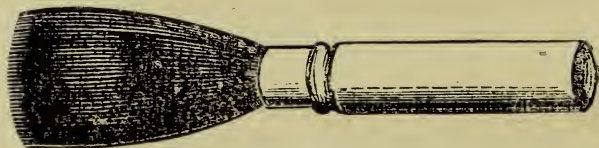
run off, assuming a honeycomb or spotty appearance. This is technically called "cissing." On a newly painted wall the space to be written upon may be rubbed over with soft chalk, which will serve the same purpose as wetting, though it is not so cleanly.

The letters are then set out with pipe-clay, and afterwards outlined with a sable hair pencil, charged with colour, by which all the imperfections noticeable in the setting out are corrected. The young writer will at first be puzzled to make a neat line with the sable pencil, because when it is charged with colour it is inclined to droop at the point, and much practice is necessary before the pencil can be guided exactly where it is required to go. Beginners are apt to make the outlines of the letters by a series of short fitful strokes with the pencil, but the better plan is to strike each line boldly without much "teasing," almost in fact without lifting the pencil, and then if the line be not satisfactory any improvement can be effected. At the outset it will be found difficult to proceed without giving a multiplicity of touches in outlining with the pencil, especially in the case of large letters, but practice will overcome the difficulty, if it be carried on with that object; whereas if the beginner acquires the habit of making his outline by a series of short broken strokes, he will not find it easy subsequently to depart from this method of procedure. The plan recommended is the most expeditious, and is followed by all the best writers. When the letters have been outlined, the next thing is to fill them in and this is done by means of a larger sable, the hairs of which are somewhat shorter than those used for outlining.

It is of the utmost importance to select writing pencils of the finest quality. The most costly are the cheapest in the end, having regard not merely to the length of time that the pencil will last, but to the greater rapidity with which the writing can be per-

formed by a good one. A bad pencil is a nuisance at any time, and prevents the writer from making the rapid progress that he would do with a good one, to say nothing of the annoyance it is pretty sure to occasion. For some purposes the common camel-hair pencils are serviceable; but for those colours which have a lead basis, and are consequently very heavy, they are next to useless, the weight of the colour causing them to sag or bend to such an extent that it is difficult to guide them with any precision.

SWAN TIN CAMEL-HAIR.



LARGE SWAN-QUILL CAMEL-HAIR.



SMALL SWAN-QUILL CAMEL-HAIR.



These pencils, however, may be advantageously employed for glazing with transparent colours diluted with a large proportion of varnish. Sable pencils are generally used by writers. These are very durable, and being stiffer than the camel hair, are particularly adapted for the heavy colours. We append illustra-

tions of sable writing pencils, which can be procured of a great variety of sizes :—

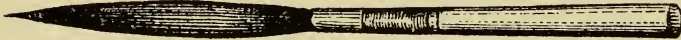
MINIATURE.



CROW.



DUCK.



GOOSE.



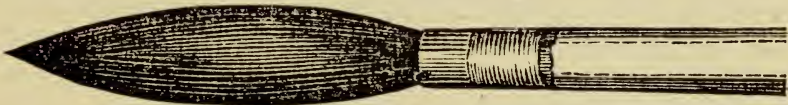
FULL GOOSE.



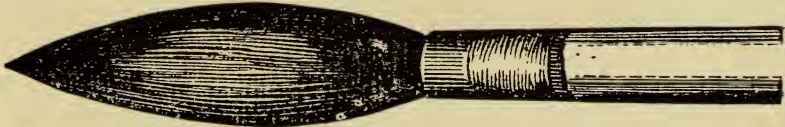
EXTRA FULL GOOSE.



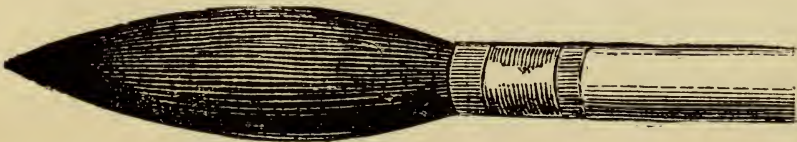
SMALL SWAN.



MIDDLE SWAN.



LARGE SWAN.



All letters of a light colour painted on a dark ground must be gone over twice, and sometimes three times, before the ground is thoroughly covered. White letters, for instance, will not cover a dark ground unless there are at least two layers of the white, one being superposed over the other, by which solidity will be obtained. When the letters are large it will be necessary to go three times over them to ensure their being perfectly solid in appearance. The object is to cover the ground thoroughly, so that no trace of it shows through the letters; but as the white has not sufficient body to cover the dark ground in one layer, this want of body or covering power is compensated by the application of successive layers. The same applies to white tinged with any colour. Even some of the dark colours—those that have but little body—often require a second coat. Vermilion on a light ground will be improved by having at least two layers. When vermilion is used, some writers put on for the first coat a common red lead, and finish up with vermilion. This is a dangerous practice, because the lead basis will destroy the finishing colour, however pure it may be, and in a few months it will turn to a sort of muddy chocolate. In all cases the vermilion itself should be used for the first as well as the finishing coat. It is a poor economy that saves a few pence and spoils the work in consequence. In this respect the employer is quite at the mercy of the workman, for, not being a practical painter, he can never tell what material is being used; and it is sometimes the case that the painter himself is ignorant of the chemical action of the colours upon each other.

Vegetable black will cover any colour upon which it may be placed, and is a most agreeable working colour. The only other colours that will cover with one coat are chocolate; purple brown; Indian red; a common grass green, made by mixing Prussian blue and chrome yellow; and a few other compound colours.

Those that will not cover are white, vermilion, ultramarine, emerald green, orange, purple, and the transparent colours—burnt sienna, Vandyke brown, lake, &c.

We now proceed to give a few particulars as to the most common styles of colouring used in sign-writing.

Lettering on a ground of ivory black is always attractive, and if the different rows of letters are varied in tint, and prominence given to the more important lines by judicious contrast of colours, the result will be very striking. Emerald green diluted with white, or used in its intense state, has a rich appearance. In contrast with this, other lines may be written with carnation, a mixture of vermilion and white. For lines that are of secondary import, a diluted purple—composed of French ultramarine, vermilion, and white—may be used. These three tints, if judiciously employed, will not require any kind of thickness or outline of another colour; and of course, the ground being black, a cast-shade is unnecessary—not to say impossible.

A plain gold or white letter on a black ground is suitable for some purposes; but yellows and reds in full strength, or undiluted with white, never look well on black, as they have a tawdry effect.

On a chocolate, Indian red, or purple ground, also, letters of different colours, reduced in tone by an admixture of white, may be used with powerful effect, especially when brought up with a thickness and shadow. It is important to observe the distinction between the black ground and the chocolate, inasmuch as while the former in scientific nomenclature is not a colour, the latter is. Consequently, as the rule is that one colour should not overlies another, the letters which are written in different tints on the chocolate ground, must be separated, as it were, from the ground by means of a gold or white line around their edges. In the case of the black

ground no such edging is required, the coloured letters not being upon a coloured ground, as in the latter case. It is most important to bear this distinction in mind, as it is a rule that cannot be disregarded with impunity. This will soon become manifest in practice. If a green letter, for instance, be placed on a chocolate or any dark ground in which red is an ingredient, it will look unnaturally crude, if it be not relieved by a gold or white edging. Even a bright red letter will not, under the same conditions, be free from crudeness, although to some extent a friendly colour to the ground. As a still stronger illustration of this point, paint a vermilion letter on an emerald green surface, and carefully notice the result. It becomes important, then, to bear in mind that coloured letters on a coloured ground should never be used unless they are at least invested with a white or gold edging; and if a gold thickness can be added, the effect will be heightened. A black cast-shade will throw the letters out, and help to give them a raised appearance. In some cases a coloured thickness may be rendered effective on a dark ground, so long as the indispensable gold or white line be not neglected; but it ought never to be allowed to impinge upon the colour of the letter itself, unless that colour be in imitation of, and a substitute for gold, in which case it ought not really to be regarded as a colour at all, but as the thing for which it is substituted. This important principle of separating colours by means of a white, black, or gold line has been recognised for centuries.

There are different methods of procedure in regard to coloured writing, some writers preferring one plan and some another. Blue letters, for instance, brought up with a gilt thickness on a light ground, may be produced in two different ways. That most generally adopted is to do the outline and gilt thickness first of all, and then to fill up the body of the letters with

the blue, or any other colour that may be required. The advantage of this method is that the work can be completed without the necessity of waiting till the colours are dry. If the body of the letters be first written in colour, the paint must be allowed to dry before the gold leaf can be applied, and in addition to the inconvenience of delay there is the danger that fragments of the gilt will adhere to the letters. By putting on the gilt first both these drawbacks will be avoided. The gilt edging or line round the letters should be neatly executed, and for this purpose a sable pencil will be found indispensable. Should the under part of the thickness not be gilded, but brought up in colour in imitation of gold leaf in shade, this will make no difference to the gilt edge which impinges upon the shaded thickness. That must, of course, be carried equally round the whole of the letters. In order to separate the edging from the light thickness, or that which represents the side of the letters on which the light falls, a fine dark line should mark the distinction. This line ought to be drawn very carefully on the gilt, because if it have a tremulous or jagged aspect it will mar the effect of the writing, as the gold will serve to show up the imperfection. The under or shaded thickness is sometimes gilded, and washed over with a transparent glaze of burnt sienna and Vandyke brown, graduated or softened off from dark to light by means of a moderate-sized sable pencil. If this part of the letters be painted, instead of gilded, the colours used are yellow ochre, burnt sienna, and Vandyke brown. To add to the effect of this style of writing on a white or any light ground, a black shadow should appear on the side opposite to that of the thickness, and at least two other shade tints should be made beyond the black. It is customary to complete the faintest shadow first, then the one a little stronger, and finally to add the black close to the

body of the writing and under the bottom of the shaded thickness.

When a light thickness is added, say to gilt letters, on a dark ground, the writer will find it advantageous to paint the whole of the thickness in white first, and when this is dry to put on the required colour and soften with two or three sable pencils. This softening or blending is not done with the ordinary quick drying colours generally used for writing, but the colours are thinned with boiled oil and turpentine, and a small piece of common dryers is added instead of varnish or gold size. The most beautifully softened thicknesses are always executed with tardy drying colours, and two or three pencils are used, according to the size of the writing—one for the highest light, another for the middle tint, and a third for the darkest parts. If quick drying diluents are employed, the difficulty is that the colours set before the blending can be properly executed, and as a necessary consequence, the work presents a streaky appearance. In some cases it is impracticable to use colours thinned with boiled oil; and when this happens the best must be done with the materials ordinarily employed. In either instance there should be at least three different tints on the palette, and each should be kept separate, so that there may be no variation in the strength of the tints from one end of the line of lettering to the other. The shadow is always represented after the thickness has been finished. If the body of the letters be white or a light colour, it will be found necessary to paint them over two or three times; but the last layer need not be added till the thickness and shadow are completed.

Some sign-writers have a partiality for an intense purple, and use it indiscriminately in any arrangement. When seen in the day time, purple has pleasing and agreeable qualities, being somewhat cool and retiring. But in artificial light its effect is altogether changed.

The reason is obvious. It is well known that all artificial lights in common use partake of a warm yellow colour, which is diffused on all surrounding objects. Yellow, which is the natural contrast to purple, becoming thus, as it were, incorporated with the purple, neutralises and destroys its purity. The same obtains with regard to pure blue. Ultramarine has a grey effect in artificial light, arising from the same cause. The reverse holds good in respect to colours which are allied to red, the artificial light rather improving their brilliancy than otherwise. These matters ought to be taken into consideration in deciding upon colours to be used for particular arrangements, so that the effect may be equally good under any light.

Though gold leaf is almost invariably applied indiscriminately upon any ground colour, yet it must be borne in mind that this is neither a commendable nor a judicious course. There are some colours on which gold leaf never appears to advantage; whilst on others it soon becomes deteriorated, owing to the chemical properties of the colours eventually "sweating" through the metallic leaf. This particularly applies to the green, and especially to bronze green, on which gold leaf tarnishes or fades sooner than it does upon any other colour. As a rule, gold leaf does not stand out well on any kind of graining, though sometimes it may be very effectively used upon a marbled surface. Of course, to produce a satisfactory piece of work on these grounds, which are of a mottled or mixed character, a good deal of judgment and ability is required, or the operator will find that his labours have a very different result from what he intended. The marbled or grained ground being of different shades and degrees of colours, the writing should partake of a colour that most contrasts with the general tone of the ground; for if a similar colour be used, the writing will in some places be so nearly the colour of the ground that it will be almost indistinct, and any attempt to alter this by the

addition of a thickness and shadow will, to a certain extent, be unsuccessful. On a marbled or grained ground, contrast must be aimed at in the writing, if it be required to stand out in any sort of relief. Take, for instance, a ground of serpentine marble—a rather bright green,—it would be folly to put a blue or a yellow letter upon this, as the ground itself is a combination of these two colours; and, if either of them were used, the effect, so far from being pleasing, in consequence of its harmoniousness, would be most disagreeably insipid. Even for the thickness any one of the colors used in combination for the ground work ought not to be employed, if a really bold letter be the object sought to be achieved by the writer. The best and only suitable colour for writing upon green marbling will be found to be a carnation, made by mixing together vermilion and white lead. This is a very delicate and, withal, rich colour in which to form the letters, and a neat and elegant finish can be given to the writing by the introduction of a gilt line round the edges of the letters, and a gilt or yellow thickness, with black shade. The effect of this arrangement will be far better than can be secured by any other mode of working. This is preferable even to forming the letters in gold, and to introducing a carnation thickness, which is the next best way of producing an agreeable piece of work on a mixed surface of greens, interspersed with multitudinous varieties of tone, from highest light to deepest shade tint.

Writing executed upon imitations of wood is less objectionable than on marbling. Wood graining is more uniform in colour, the gradations not being so abrupt as they are in marble. On any kind of dark wood, letters may be very effectively painted, and a richness may be made to result; but even writing on graining of this kind cannot be so successfully managed as it can on a surface of uniform colour. Mahogany or walnut grounds, however, are the least

objectionable, because, being somewhat dark in tone, any kind of light letter will stand out boldly, and by a judicious combination of colour and gold leaf something attractive may be produced.

In concluding this chapter on sign-writing, we subjoin a few specimens of alphabets, which may safely be followed as regards their general design by the student, the shapes being in each case highly commendable and worthy of imitation. Other specimens of lettering might have been given, but it has not been thought advisable to extend this little work by affording an undue variety of styles, which the young writer is recommended to form for himself:—

OLD ENGLISH.

A B C D E F G H I

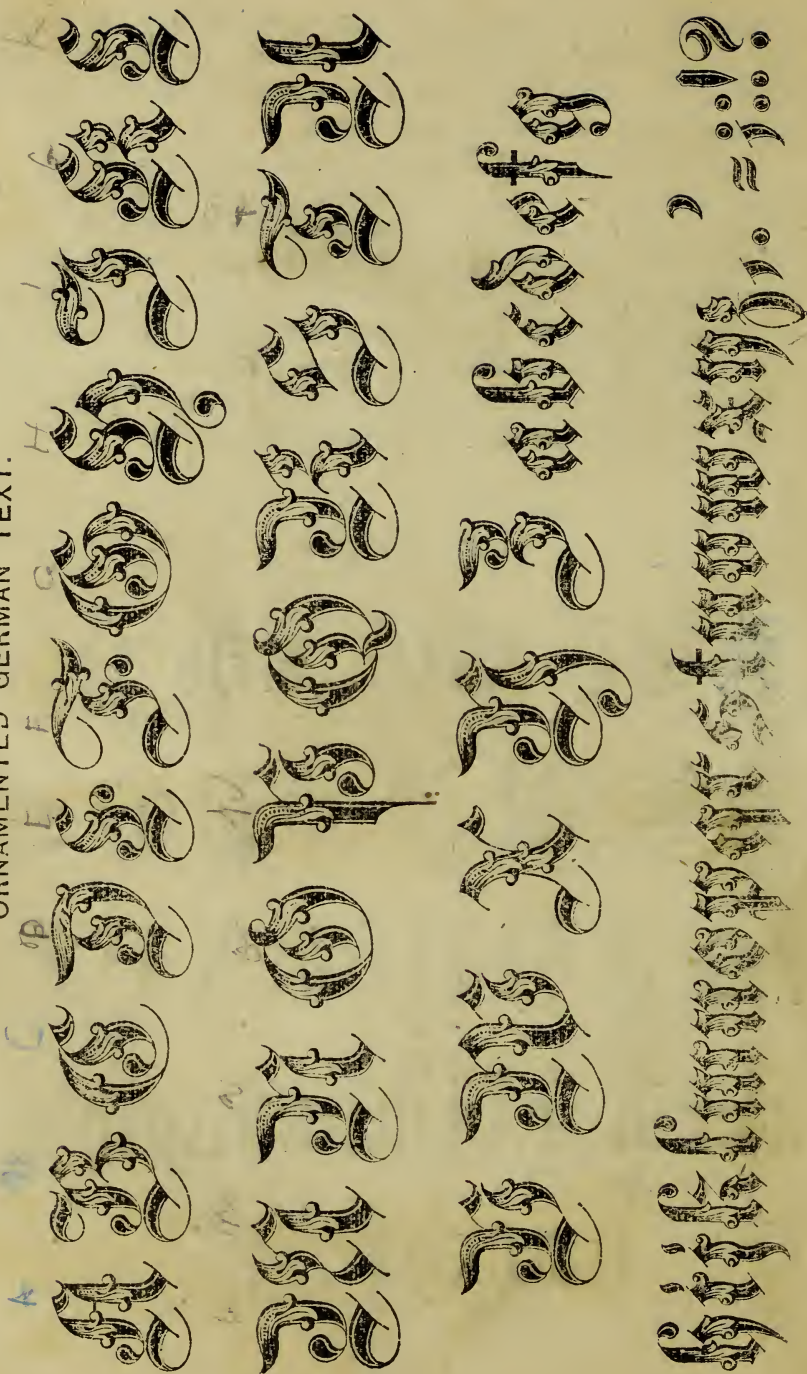
K L M N O P Q R

S T U V W X Y Z

a b c d e f g h i j k l m n o p q r s t

u v w x y z, . ' - ; : ! ?

ORNAMENTED GERMAN TEXT.



TUDORESQUE OPEN

A B C D E F G H I J K L M N O

P Q R S T U V W X Y Z

a b c d e f g h i j k l m n o p q r s t u v w x y z

aa bb cc dd ee ff gg hh ii jj kk ll mm nn oo pp qq rr ss tt uu vv ww xx yy zz

TUSCAN SHADED.

A B C D E F G H I J
 K L M N O P Q R S
 T U V W X Y Z Æ Æ
 & £ , . ' - ; : ! ?
 1 2 3 4 5 6 7 8 9 0

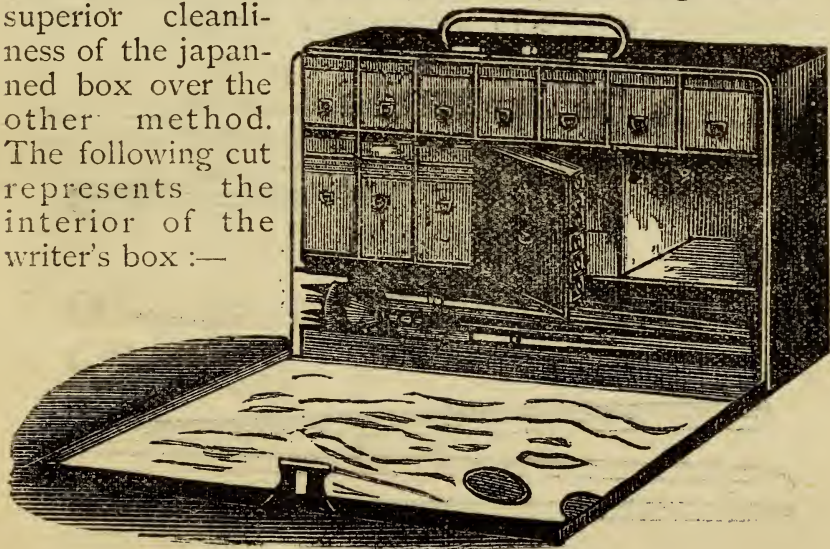
ROMAN.

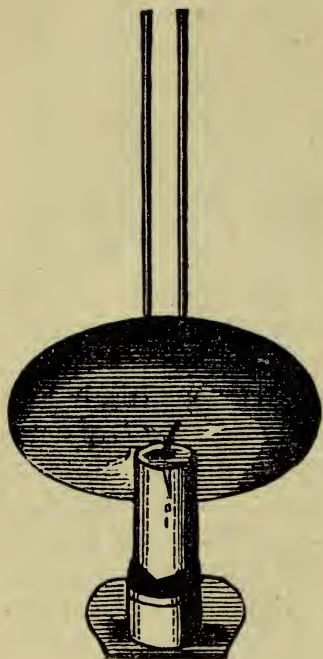
A B C D E F G H I J K L
 M N O P Q R S T U V W
 X Y Z Æ Æ , . ' - ; : ! ?

EGYPTIAN.

A B C D E F G H I J K L
M N O P Q R S T U V W
X Y Z Æ Æ
a b c d e f g h i j k l m n o p
q r s t u v w x y z æ œ f i f i
f f f f f & £ , . ' - ; : ! ?
1 2 3 4 5 6 7 8 9 0

In connection with this subject, it may here be mentioned that a most serviceable tin box has been manufactured for the express use of sign-writers, glass embossers, decorators, gilders, &c. This japanned box is fitted in a complete manner. It contains every requisite which can possibly be required. There is a series of compartments with tightly-fitting lids to contain the colours, so that there is no danger of their getting accidentally mixed and spoiled, as is often the case when they are carried loosely in a basket. There are also bottles with screw lids to contain turpentine, varnish and other diluents ; spaces for gold-leaf book, tube-colours, brushes and pencils of various kinds, and a palette. The spaces for the whole of these articles are so nicely adjusted that there is a maximum of convenience with a minimum of bulk. The weight of the whole is very trifling, and the handle is so placed that the box is well balanced in the hand and may be carried about without trouble. It need not be remarked how very superior such a *multum in parvo* must be to the cumbrous baskets which writers and decorators ordinarily carry, to say nothing of the superior cleanliness of the japanned box over the other method. The following cut represents the interior of the writer's box :—



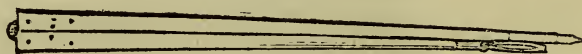


We append here an illustration of a candlestick for writers, decorators, and others, who are obliged to carry on their labours often at great inconvenience. The value of the contrivance here brought under the notice of the reader, needs no word of comment to ensure for it ready adoption, as its utility must be self-evident. It is furnished with a shifting reflector, so that the light can be thrown upon any particular spot, and the workman is thus enabled to execute his work with a facility and a finish which are unapproachable when the ordinary candlestick alone is used.

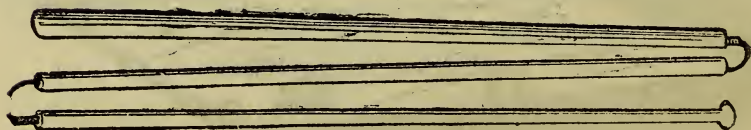
The following illustrates a set of dividers, which are of great service to writers and decorators. They can be had of various sizes :—



DIVIDER.



DIVIDER.



FOLDING MAHL STICK.

GILDING.

GOLD leaf is sold at most colour shops and artists' repositories in books containing twenty-five leaves of gold, each leaf being carefully placed between the paper constituting the book, which is first rubbed over with red bole to prevent the gold from adhering. The size of the leaves is about $3\frac{1}{4}$ inches square, and the cost of a book is 1s. 3d. or 1s. 4d. Gilders estimate their work by the number of "hundreds" it will take, and not by the number of books. If, for instance, it is reckoned that the work will require 100 leaves, it is not customary to say that it will require "four books," but "a hundred," meaning, of course, a hundred leaves.

Too much care cannot be bestowed upon the selection of gold leaf, as the dearness of gold offers a great inducement for the employment of metals of less value in its manufacture. Pure gold being too ductile to be worked between the gold-beater's skin, a certain amount of alloy is always added, varying from three to twelve grains in the ounce. Generally, there are about six grains to the ounce, or one-eightieth part. The alloy consists of silver or copper, and sometimes both, and this accounts to some extent for the difference in the colour of the gold leaf. If more than the usual quantity of alloy be employed, the durability of the metal, as used for decorative purposes, is destroyed. It sometimes happens, too, that the gold leaf is kept in a damp place, or has in some way been exposed to

a damp or uncongenial atmosphere. In this case it will be found to adhere partly to the paper leaves of the book, and it will be impossible to remove it without tearing it in pieces, when it is almost, if not entirely, worthless ; and not only is the gold leaf torn by this partial adhesion to the paper, but the edges become so tarnished by the damp to which they have been subjected, that they will completely sully, and perhaps altogether spoil, any work to which they may be applied. Gold leaf should fall freely from the book on the leaves being opened, without any particle sticking to the paper. Some gilders place the books before the fire for an hour or so previous to use, in order to dry the gold leaf and render it more manageable, and this is a practice which the sign-writer may advantageously adopt.

Gold leaf may be obtained of different colours. The palest, generally known as "pure virgin," is but a few shades removed from white, approximating to silver ; whilst the "deep," as it is technically called, approaches a copper colour, being alloyed with a large admixture of that metal. There is then, a "medium" or "yellow," and, for all practical purposes, this is most generally useful, inasmuch as it is not so apt to become stained by the varnish which, in sign-writing, is nearly always coated over gilt work. If the medium colour be left unvarnished, it is more durable than either of the other colours. It possesses sufficient depth to prevent it from appearing silvery, as "pure virgin" does when left unvarnished, and it has not that coppery hue which distinguishes the "deep" gold. Moreover, the "medium" is not so liable as the other colours to be acted upon by the atmosphere, when used on outside work. In exposed situations out-of-doors, pale gold leaf should always be varnished; or in the course of a few months it will become tarnished. Deep gold leaf also will soon lose its brilliancy if exposed to the weather unless a coat of clear varnish be added. The

common dark varnishes should in all cases be avoided, because their tendency is to become darker, and they will destroy that bright metallic appearance which is characteristic of gold leaf.

Owing to the extreme ductility and malleability of gold, the leaves are hammered out by the gold-beater to a surprising degree of thinness, rendering its use a matter of some difficulty. The ordinary gold leaf is usually estimated at the 282,000th of an inch in thickness; but the modern French manufacture does not exceed the 480,000th of an inch. An ounce of gold may be beaten into 1,600 leaves, each three inches square, in which state it covers more than 159,052 times its former surface. In ancient times, when gold leaf was extensively used in all kinds of decorations, the thickness of the leaf was much greater than it is at the present period. From a description given by Pliny of Roman gilding, it appears that the gold-beaters of that period could not get more than 750 leaves, "four fingers square," out of an ounce of gold, and, therefore, the thickness must have been about double that of the modern manufacture.

The great expense of gilding in former times, caused by the thickness of the leaf employed, led to the use of various substitutes for gold. Towards the 16th century the Italians invented a method of overlaying with silver leaf, or some cheaper white metal, those parts which they wished should have the appearance of gold, and then, by applying a yellow transparent varnish, the white metal was made to assume the required colour, and at the same time to present a metallic splendour. Anderson, in his "Origin of Commerce," says that this practice was introduced into England by one Evelyn in 1633. On the better kinds of work, however, it was no uncommon thing for the best metal to be employed, and even for two thicknesses of the leaf to be placed on the same parts, in order to bring out the full lustre of the gold and to ensure its greater

durability. The work executed in this way was called "double gilt," a term which is still freely used, although it is seldom that a double layer of gold leaf is to be found in any modern work, except in the case of flat surfaces, where it is almost a matter of necessity. In the *Twelfth Night* Fabian is made to say,—

The *double gilt* of this opportunitie you let time wash off,—

showing the sense of superiority in which the practice of double gilding was regarded by Shakespeare, and, it may be assumed, by the superior minds generally in his day. And even within the present century it was the custom of some sign-writers to double-gild their letters, with the view of giving them additional brilliancy and permanence. Now, however, so far as the sign-writer is concerned, this plan is never resorted to (except in the case of gilding on glass, which is a totally different branch of the art,) the advantages derivable from it being disproportionate to the cost of the metal and the extra trouble of putting it on. At the same time, double gilt is still occasionally applied to the best work of the picture frame and cabinet gilder.

Before passing on to notice the methods of gilding generally adopted by painters and writers, it may here be pointed out that an inferior kind of metal, in imitation of gold leaf, is procurable at the price of 6d. per book. This, however, is an article which is hardly worth attention. It can only be adopted for temporary announcements, as its properties are evanescent, and it ought not on any account to be used for work subjected to close inspection, because it always presents a tawdry "Cheap Jack" appearance, however dexterously it may be laid on. Indeed, it never approaches pure gold leaf in its effect. Like the common tinsel, known as "Dutch metal," which can be bought at the rate of 1½d. per book, the inferior quality of gold leaf is chiefly used for theatrical scenery, where a tempo-

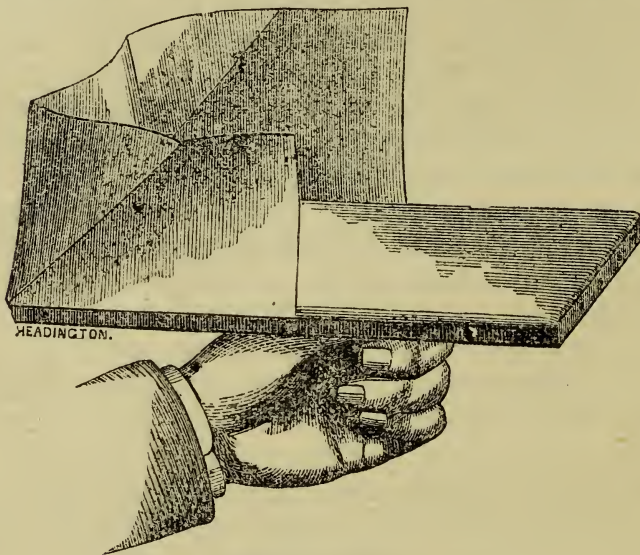
rary brilliancy is required and durability is not an object. Dutch metal is extensively used by shopkeepers for "gilding" laurel and other leaves, holly-berries, and so forth, for Christmas displays, and formerly designs in ginger-bread covered with this article were quite an "institution" at all kinds of fairs. For this and kindred purposes, Dutch metal is quite as effective as the best gold leaf, and, owing to its greater thickness, it is much less difficult to handle. Indeed, any one inexperienced in the use of gold leaf could not hope to succeed in performing with it the apparently easy task of gilding even ginger-bread. The metal is beat out to such a degree of thinness that it requires a steady and skilful hand to manage it satisfactorily, and this can only be done as the result of repeated trials. Dutch metal, on the contrary, is so thick as to be manageable (in so far as it is capable of management) by any person, however inexperienced.

Were it not for the extreme thinness of gold leaf, it would not be possible to prevent the multitudinous joinings from showing. If executed by an unskilled workman, the joinings of the gold are sometimes perceptible, and numerous fractures caused by breaking the gold leaf, technically called "spider legs," are here and there apparent. But if the gilding be skilfully and properly executed, no matter how numerous the pieces of gold leaf employed, it will appear as if it were done by a single leaf, instead of an aggregation of small pieces, often of irregular sizes and various shapes.

For the purposes of gilding, the tools necessary are a cushion, cutting knife, and a "tip," each of which calls for a few words of explanation.

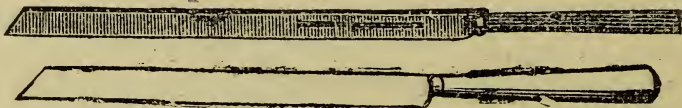
A gilder's cushion is a flat piece of wood, measuring about 8 inches by 5, covered first with baize and then with soft wash leather, which is drawn tightly over it. A ledge of parchment of about 3 inches in height

protects three of the sides, and is intended to keep the gold leaves from flying off the cushion, for the merest draught is enough to scatter them in all directions. A loop is placed under the cushion for the insertion of the thumb of the left hand to hold it by whilst in use, the loop answering the same purpose as the thumb-hole of a palette; and sometimes there is a second loop for the cutting knife. The following cut represents a gilder's cushion, and the method of holding it:—



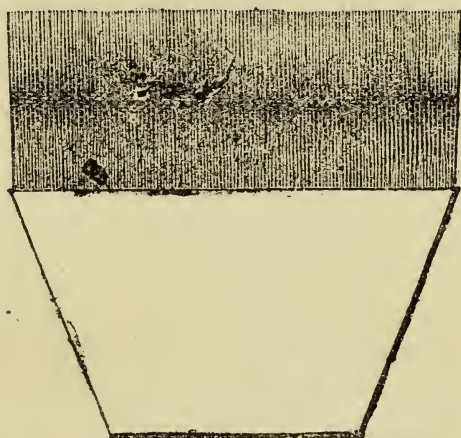
GILDER'S CUSHION.

The knife is used for cutting the gold leaf upon the cushion. It has a long and flexible blade, with a perfectly straight and smooth edge, and must be kept very clean, or instead of cutting the gold it will merely tear it and crumple it up, rendering its use a matter of difficulty. The following illustration represents the gilder's knife:—



GILDER'S KNIVES.

A "tip" is a sort of flat brush, made of a thin layer of some soft hair, and held together between two pieces of pasteboard. This brush can be obtained of different widths, and of various lengths of hair, and the price ranges from about 2d. to 3d. each. An illustration of the tip is appended :—



GILDING TIP.

It is used for removing the gold leaf from the cushion to the part to be gilded. The tip should be drawn lightly across the face or hair, and then placed upon the gold, when the moisture on the brush, derived from the face, slight though it be, will cause the gold to adhere to it sufficiently to enable the workman to lift it up and deposit it on the surface prepared for its reception. If a leaf of gold has been cut in a dozen pieces by the cutting knife, each piece must be lifted from the cushion and placed in its proper position by means of the tip, and so on till the entire surface is covered.

The method that is most commonly practised by experienced gilders, for outside work, is the following. They shake out about a dozen leaves of gold upon the cushion, puff them on one side against the parchment screen, then lift one leaf with the cutting knife to the middle of the cushion, and when it has been flattened

by a slight puff* of the breath, it is cut to the required dimensions, and lifted and placed in position with the tip. Of course, piece after piece is placed on the parts to be gilded in the same way, until the whole space is covered. The leaf is then rubbed over gently, or rather pressed against the gold size, with a pad of cotton wool, by which means the superfluous pieces of gold are removed and the jagged edges smoothed.

Other gilders, again, when working out-of-doors, prefer to take the gold leaf from the book without cutting it at all. They turn back the paper leaves, and place the gold leaf direct against the surface which has been prepared for it. By following this plan, however, a great portion of the gold leaf is wasted, and, as it seems, without any corresponding advantage. The slightest draught or current of air renders it a matter of no small difficulty to proceed in the manner here indicated, and, indeed, it would be impossible to do so if there were the least wind, unless the workman were carefully sheltered from it by some kind of awning or close covering. The same applies also to the method of gilding out-of-doors with tip and cushion, already described.†

The gilder should procure a clean sheet of silver or tissue paper, of not too great a density, and rub it over

* There is required in this gentle puff of breath a something which will at first greatly perplex the beginner. We can only define it as "knack," to be acquired by experience. When performed by a skilled workman, it is apparently the simplest thing in the world, but a great many of the puffs at the outset will result in disappointment and loss of the leaves of gold. There is no royal road to the acquisition of this art, which is apt to deceive the uninitiated by its apparent simplicity; but the beginner must expect to pay the usual forfeit demanded of inexperience before he becomes a proficient gilder from the cushion.

† Speaking of the covering under which gilders in exposed situations work, it may be remarked that many persons have an idea that the object is to keep their art a secret, whereas in reality it is a matter of absolute necessity. That this notion is a very old one is evident from a passage that occurs in *The Silent Woman*, by Ben Jonson, to this effect:—"Gilders will not work, but enclosed. They must not discover how little serves, with the help of art, to adorne a great deal."—Act I. sc. I.

on one side only with a piece of white wax. A piece of wax candle, or even beeswax, will answer the purpose. This should be held between the thumb and forefinger of the right hand, and rubbed rather briskly over the surface of the tissue paper, which should be placed upon a book or something perfectly flat, so that the wax is spread evenly throughout. The paper which has thus been rubbed will, when held sideways to the light, be seen to have a glossy surface, and will possess a certain "tackiness," or sticky quality, scarcely perceptible to the touch, but sufficient to cause the gold leaf to adhere to it. After a whole sheet of paper has been waxed as described, it should be cut into squares a little larger than the leaves of the book of gold. This having been done, the gold leaf book should be carefully opened, and the waxed side of the tissue paper gently pressed upon the gold leaf with the hand. On removing the paper the gold leaf will be found attached to it. Each leaf of gold should be taken out in the same way until the whole book is emptied. The gold leaf, being thus secured upon the tissue paper, is ready for use. It must be evident that the difficulty experienced through the extraordinary thinness of the gold is by this means to a great extent overcome. The tissue paper with the gold attached can be handled by any person, however inexperienced, and may be used over and over again.

Let it be supposed that the letters to be gilded have been written in the most suitable material, and that they are ready to receive the gold leaf. All that the gilder has to do is to take up the tissue paper with the left hand, and to place it with the gilded side to the letters, and, having rubbed the back lightly with the right hand, the gold will come off the paper and adhere firmly to the mordant with which the lettering has been written.

Besides the simplicity of this method of gilding, another great advantage it possesses is the small

amount of waste that takes place. The tissue paper being semi-transparent, the gold leaf shows through it, and the operator can see where any portion of the gold adheres to the paper, and can accordingly place it on such portions of the work as it will best fit, without an undue number of joinings, though by this process, if the gold leaf be good, not the slightest trace of any joinings is discernable. It will readily be understood that every particle of the gold can be made use of.

In addition to these advantages, this method of gilding possesses other recommendations which are deserving of mention. In the first place, the labour of affixing the gold leaf to the tissue paper, and subsequently to the lettering, can be performed by an apprentice or any one who would utterly fail if called upon to use it in either of the ways previously described. Then, again, as already intimated, gilding from the tip or cushion, or from the book without cutting, cannot be effected out-of-doors if there happens to be any force of wind.

In either of the foregoing methods the gold leaf should be gently dabbed over with a pad of cotton wool, which will smooth the surface of the gilt, and remove all superfluous pieces of gold leaf.

There is one thing preliminary to the process of laying on the gold which has not yet been noticed. A newly painted surface is, of course, sticky, or what is technically called "tacky;" and if the gold leaf were to be applied to such a surface, it would adhere, or "hang," as it is called, to parts of the ground colour where the mordant had not touched and where the gold was not required. It is needful, therefore, before the letters or parts to be gilded are even marked out, that the newly painted surface should be "pounced"—that is, dabbed over lightly with dry whiting; but care should be taken that the loose particles are dusted off by the gentle application of a silk handkerchief.

If the ground be a dark one, this pouncing (which is best done by placing the whiting in a linen bag and making a kind of pad or ball, which should be dabbed over the work) will so far lighten it, that the gilder will be able to distinguish any lines he may make with the sable pencil charged with size, as the size will restore the ground to its original colour. But, if the ground be a light one, the pouncing will not have this effect, and hence it becomes necessary to mix some kind of colour with the size to enable the gilder to make certain that he has thoroughly covered the portion to be gilded. The whiting is removed from the ground after the gold leaf is applied, by means of a damp chamois leather.

The mordants use for gilding are of different kinds. Picture frame gilders generally make use of what is technically called gilders' size, made of fat oil, in which yellow ochre has been ground. This is, under certain circumstances, a good material for the purpose of the sign-writer, but it is too thick for general adoption, especially in cold weather, when it is unmanageable with the sable pencil. In hot weather, however, it is not so thick, and may often be used with advantage. The gold leaf must not be applied to this mordant for at least twenty-four hours after its application, and it will remain tacky for two or three days. It is perhaps the most durable of any of the sizes used for gilding. When the gilding has to be finished more rapidly, japanners' gold size is generally employed. The gold leaf may be laid on this vehicle in about half-an-hour after its application, as it dries very rapidly. Owing to exigencies of time, and sometimes of the weather, the gilder is frequently compelled to prepare his work and put on the gold leaf a few minutes afterwards. When this is the case, gold size alone is used. But it an interval of a few hours be no object, and if the work cannot be left for completion till the next day, it is customary to add oil varnish to the gold size, regulating

the quantity according to the time at disposal. Linseed oil should not be mixed with gold size to retard its drying properties, because it is apt not only to destroy the adhesiveness of the size, but to "sweat" through and ultimately discolour the metallic leaf. A few drops of boiled oil may be added to the size occasionally, but, as a general rule, varnish will be found preferable to either of the oils mentioned.

BURNISHED GILDING ON GLASS.

The art of burnished gilding on glass was for a long time kept a profound secret by the masters of it; and it was not until this kind of ornamentation was extensively adopted that a knowledge of it became at all general amongst sign-writers, who have made this department of decoration almost exclusively their own. Indeed, even now there are many sign-writers who are ignorant of the art, and look upon it as quite special, and altogether beyond their reach. And yet, when properly understood, it is exceedingly simple. It is our intention to give full directions for effecting this kind of work, so that the humblest aspirant will be able to produce the gilding clear and bright without difficulty.

The gold used, it need hardly be mentioned, is the ordinary gold leaf.

In the first place, it is necessary to form a mordant for fixing the gold leaf to the glass. This is done in the following manner:—Procure some fine isinglass, and place about as much in a tea cup as will cover a sixpenny piece, and then pour on it about half a cupful of boiling water, which will dissolve the isinglass. Before the water has got cold add about as much spirits of wine as there is water in the cup; then strain the whole through a clean silk handkerchief, and the mordant is ready for use. The addition of the spirits of wine is most material, as without it the gilding cannot be satisfactorily accomplished. Some gilders

prefer the common form of gelatine to isinglass, but the practitioner will soon discover in practice which article best suits his convenience.

Whatever may be the design or lettering that has to be executed on the glass, it must first be set out on a sheet of white paper, and painted with Brunswick black, so that it can be seen on the reverse side. This paper with the writing reversed should be fixed at the edges or corners to the glass, by means of paste or wafers, the writing, of course, appearing backwards. The glass having been thoroughly cleansed and rubbed with a silk handkerchief, the gilding may be commenced, the gold leaf being laid on the reverse side to that to which the paper is attached. It is usual to place the glass in a slanting position on an easel, the lines of lettering not being horizontal, or reading from left to right, but perpendicular, reading from top to bottom. The mordant is put on,—or, more correctly, “washed” on,—with a soft camel-hair pencil, or gilders’ mop, of large dimensions, and the gold leaf is lifted from the cushion and placed on the mordant with a tip, after having been cut to the required dimensions. If the line of writing be less than about three inches in height, it is advisable to gild the whole line, without paying any regard to the shapes of the letters, so that when the line is finished it will present a solid piece of gilding about the same height and length as the letters, and nothing more. The first piece of gold leaf should be placed at the beginning of the line, which is the top of the glass, and each succeeding piece below it, the different pieces just overlapping each other. It is necessary to be particular in this matter, because if the pieces of gold do not meet together, the interstices may, and most probably will, show when the work is completed, and will prevent the uniformity of burnish which it is so desirable to attain. For letters of larger dimensions than three inches in height, the gilding may, as a gene-

ral rule, be made to cover each letter, leaving the spaces between untouched. When the process of gilding is completed, these letters will present but a rough resemblance to their general and true shapes, the pieces of gold leaf being irregular in size, and extending in different directions over the correct outline of the writing. The beginner will probably endeavour to make the gold leaf go too far, and be too niggard of its use; but a short experience will teach him that the wisest economy is to cover not only the whole of the letters with the metallic leaf, but to carry it a safe distance beyond their boundary.

As soon as the gilding has been completed thus far, it should be left to dry in a warm room, or placed before the fire, in which case it will be dry in a few minutes. If there are several lines of lettering, the first line or two will probably be dry before the last is completed. There is no difficulty in ascertaining whether it is dry or not, because as it dries it assumes a burnished appearance, and presents a strong contrast to those parts which are still wet, where the gold is often crinkled up and always "mat" or dead. When the gilding is perfectly dry and bright, it should be rubbed over very gently with a piece of cotton wool. This will heighten the burnish of the gold, and remove the loose pieces which do not adhere to the glass.

The work of gilding is now but half completed. In its present stage, most likely every joining of the gold leaf will be visible on the front of the glass, and if the work be held up to the light, innumerable holes and faulty places will be discovered in the gilding. The beginner, however, need not be discouraged at this result, inasmuch as it is the common experience.

After the gilding has been manipulated as described, a soft camel-hair brush—a flat one is recommended—charged with the isinglass size should be passed lightly over the work; but, of course, the brush must not be worked to and fro, or it will remove the

gold leaf. The size should be flowed on freely and rapidly, and if any small pieces have been omitted, no attempt should be made to retouch them while the size is wet. When it is dry the gilding will resume its brightness.

In order to complete the burnish of the gold, some writers subject the work to a process which is, unfortunately, attended with no small risk. When it has been sized, as explained above, hot water is poured over the gilding, and this not only washes out any little specks which may appear on the front of the gold, but enhances its brilliancy considerably. The hotter the water poured over the work, the brighter does the gilding become. In this respect the writer is subject to a temptation which occasionally proves a source of trouble and loss; for, of course, beyond certain degrees of heat the water will break the glass. This was a very common occurrence formerly, but in modern practice the hot water bath is often dispensed with, and the size coated over the gilding is applied hot. This latter method is not quite so effective as the former one, but it has the recommendation of being safe.

The whole of the gilding has now to be repeated. A second layer of gold leaf over the first is absolutely necessary to ensure a satisfactory result. This is in the truest sense "double gilding." The second coat of gold is put on with the isinglass size, the same as the first; and as it dries, the gilding viewed from the front of the glass will present a rich and finished appearance. The loose pieces of gold should be removed as after the first coat, by means of cotton wool gently rubbed over the work. Another coat of size made hot may now be applied, and the gilding is ready to be written upon. If, however, the gilding does not assume the brilliancy it ought to do, a third and a fourth coat of size will remedy the defect. It may be added that the longer the gilding is left on the glass the harder it becomes. In all cases, it is

better to leave it on for a day or two before writing upon it, because the isinglass does not get thoroughly hard, though to all appearance it is perfectly dry in an hour or two. The affinity of gold leaf to glass is somewhat curious. If the gilding be left untouched for two or three months, the action of the spirits of wine will cause the gold leaf to adhere so firmly to the glass that it will be difficult to remove it by any amount of washing with water; whereas in the course of a few days after it is laid on, it may be readily removed by the slightest application of a damp sponge.

There are several ways of transferring the outline of the writing to the gold. Perhaps the most expeditious method is to rub some dry whiting over the front side of the writing, as set out on the paper, place this over the gilding, face downwards, then go over the outline of the letters with a pointed stick or hard pencil. On removing the paper, it will be found that where the letters have been traced with the stick, the whiting has marked the gold. Another method of transferring the writing to the gilding is to prick through the outline of the letters, and then, placing the paper so perforated face downwards on the glass, to pounce the back of it with whiting, so that the dust permeates through the perforations. This is a more tedious method than that already described, but it is equally effective.

Having by either of these modes of procedure procured an outline of the writing or design, the next step is to paint the letters with a sable writing pencil. The vehicle used for this purpose is the ordinary Japan black used by coach painters. If on turning the glass round it should be seen that the Japan black at all deadens the gilding, or is perceptible in any way on the front of the glass, another coat of size should be passed over the work to prevent the black from permeating through the gold leaf. When the Japan has become hard, the superfluous gold must be washed off

with a sponge and warm water. The workman need not be particular about forming the tops and bottoms of the letters with neatness, because when the Japan is dry, the edges may be cut up sharp and true by passing a small chisel along a straight edge, so as to trim the writing and make the tops and bottoms perfectly regular. All the straight lines of the letters may be trimmed in a similar manner, but the curved ones must be perfected with the writing pencil.

The softened coloured thicknesses added to the letters are effected with the ordinary oil colours thinned with boiled oil and turpentine, the latter being used sparingly. Three or more tints are generally mixed on the palette, with a separate pencil to each, and these are softened with a larger sable pencil, and the outer edges are cut up with a pointed stick guided by a straight edge, whilst the colour is wet, and the superfluous colour is wiped off with a piece of rag. By this means a sharpness of outline is obtained which the most skilful writer would fail to get by the mere use of the pencil. The shadow is put on as soon as the thickness is dry, and not being softened down quick drying colours may be employed.

GLASS EMBOSSING.

WE now approach a branch of decoration which, though attended with some difficulty to the beginner, is yet, when it is thoroughly comprehended and mastered, undoubtedly the most beautiful and enticing that the ornamentist is called upon to follow,—we refer to the art of Glass Embossing.

Formerly, glass was an expensive luxury in which but few could indulge, and as that used was almost invariably the common crown or sheet, its decoration became a matter of consideration, it being seldom that a decorator would waste his time and material in endeavouring to effect that which, when completed, was, owing to the thinness of the article, liable to be destroyed by the most trifling accident. But now that such vast improvements have been made in the manufacture of plate-glass, and it may readily be procured of large dimensions and thickness, at a comparatively moderate cost, the decorator has bestowed much attention upon it ; and the result has been the introduction of the art of glass embossing and burnished gilding, which has now arrived at a high degree of perfection. This species of decoration does not date back, probably, more than forty or fifty years, but within the last few years it has been brought to a marvellous state of development ; and its superiority over any other method of surface decoration has led to its very general adoption in our large public edifices, municipal buildings, &c., and in the more tastily fitted up public-houses of the metropolis and the leading provincial towns.

It is now no uncommon thing for the inside walls of a richly decorated spirit bar to be entirely covered with glass, either embossed or written on in burnished and mat gold, the whole being the work of the more advanced sign-writers and decorators. Shop facias executed in the same manner and on the same material are now quite common, whereas twenty years ago they were regarded as novelties.

Various causes have contributed to bring the beautiful art of glass embossing to the degree of perfection to which it has already attained. First, it may be traced to the great improvements which have taken place in the manufacture of the glass itself; secondly, to that love of display which is characteristic of all nations in a high state of civilisation; thirdly, to the competition which exists amongst all classes of tradesmen and shopkeepers; and lastly, as a natural corollary to competition, to the necessity of extensive publicity by means of attractive decoration. In addition to these primary causes, may be added that of the superior education of the art-workman himself, and the friendly rivalry which has sprung up between different artisans in the same branches of art.

The modern art of embossing on glass differs somewhat from the method pursued by Schwanhardt and the earliest glass ornamentists, as mentioned by Professor Beckmann, the practice now being to bite the pattern into the glass, and then to obscure the surface of the glass by grinding, when the pattern will appear bright, because being burnt into the surface, the grinding will not touch it. Schwanhardt, on the contrary, covered his design with the etching ground, and then by his liquid corroded the glass around it, leaving the pattern clear, and the ground semi-obscured. In many respects modern artists have the advantage over those of the last century. In the first place, the materials used have now become articles of commerce, and no one at present need incur the labour and trouble of

preparing them for his own use. The artists of old must have experienced some considerable difficulty in this respect. Having to manufacture their own pigments and chemical preparations, they were necessarily compelled to study practical chemistry, and to make experiments of various kinds. The results of these experiments were in some instances committed to paper, and the manuscripts are still preserved in the British Museum and other libraries. Except, however, in an archæological point of view, these documents are of little value, and the student would be rather perplexed than assisted by referring to them.

Directing our attention to the immediate subject in hand,—viz., GLASS EMBOSSING, let it be clearly understood that there is only one acid that will corrode, bite into, or dissolve glass, and that is, *Hydrofluoric*, or *Fluoric Acid*. This, then, is, of course, the principal agent employed in glass embossing, and as such we give a few words as to its properties. Fluoric acid is a colourless liquid, sold by all manufacturing chemists, and, as its property is to dissolve glass, it must be kept in a vessel made of lead, silver, platinum, or gutta percha, the latter being now generally used, owing to its cheapness. The price of it varies at the different chemists from 1s. 6d. to 2s. per lb., in its full strength; but, owing to its dangerous properties, it is never employed in its pure form. The glass embosser generally reduces its strength by the addition of about two-thirds of its bulk in water,—that is to say, to a pint of pure fluoric acid, he would add a quart of water; and even when its strength is thus reduced, it will, upon exposure to the atmosphere, emit a white vapour, which is pungent, irritating, and poisonous.

The pattern that has to be made on the glass must be painted on it before the application of the fluoric acid, because, if the acid were poured over the entire naked surface of the glass, it would obviously remove the polished surface evenly all over, and destroy its

transparency. The usual method of procedure is to set out the pattern on a piece of tracing paper, the same as architects and draughtsmen use, and which is semi-transparent, so that whatever is drawn on one side is plainly visible on the other. The pattern or design should be sketched out first, with a piece of lead pencil, and then carefully outlined with a writing pencil with any kind of black paint, or Brunswick black,—the latter being preferable, owing to the rapidity with which it dries. The design being completed on the tracing paper, and showing equally well on either side, it is only necessary to turn the paper over to have the reverse of the design as it must be worked on to the surface of the glass.

It is the general practice with embossers to lay the glass flat on a bench or table, with the design under it, the reverse side of the tracing paper being uppermost. The design, which, as we have said, shows through the paper, is then traced on to the glass with a sable pencil, the vehicle used being Brunswick black, the greatest care being necessary to prevent dust of any kind from mixing with or adhering to the black. When the whole design has been painted on the glass in this way, the straight lines may be improved by being cut up with a carpenter's chisel—a narrow one—passed along a straight edge. The black is easily cut or chipped off the glass, so that the greatest exactitude can be obtained in the several lines.

It being desirable that the hands should not touch the glass when the design is being painted upon it, experienced embossers use an arm rest, which extends entirely across the glass, and this serves the same purpose as a mahl stick in writing on upright surfaces. This arm rest is made of wood, of about one inch in thickness. It is generally about 3 or 4 inches wide, and the length is according to the requirements. A piece of wood at each end, of about 2 inches in height, keeps it from touching the glass.

Assuming that the design on the glass is to be left clear and the flat surface ground or obscured, the Brunswick black, which is used for stopping out the acid, must be placed only where the glass is to be ground.

When the Brunswick black has become *hard*, which it will do in the course of a few hours, it is ready to receive the fluoric acid. It is necessary to caution the beginner against using the acid too soon after the application of the black. This is a deceptive material in the hands of the inexperienced. In a few minutes it has the appearance of being perfectly dry, and it is so as regards the touch, but, though dry, it does not *harden* for at least ten or twelve hours, and it ought always to be allowed to stand for this time. If the acid be poured on before the black has had time to harden, it will permeate through it in some parts and destroy the sharp outline of the design. The result is about the same as would be produced if the glass was coated with any common oil colour, and then soaked in water. Glass being non-absorbent, the water would soon find its way between the paint and the glass. This precolation of the acid through the ground may arise from two causes. First, it may result from the use of an inferior Brunswick black; and, secondly, from applying the acid before the black has become thoroughly dry and hard. It is, therefore, advisable to test the quality of the Brunswick black on a small piece of glass, to show its power of resistance to the acid, before using it on any large and important work, because it may be a serious matter if, after the design is finished, it is found that the material in which it is executed is incapable of stopping out the acid from those portions of the glass which it covers.

With this word of caution, we proceed with the next step. The glass still lying flat on the bench, a ledge or wall must be made around the four sides, to keep the liquid from running off. This ledge or miniature embankment is easily made with common Russian

tallow, or any kind of soft wax, which should be laid on with a glazier's putty knife, to the height of about half an inch all round.

The work is now ready to receive the fluoric acid. This should be poured on evenly all over, to the depth of about a quarter of an inch ; and in order that it may not have a greater depth on one side than the other, a few wooden wedges will be found of service, or, the glass may be made perfectly level by means of an ordinary spirit level, before the acid is applied. Unless the glass be level and the acid flows evenly over the whole surface, the pattern will be bit in deeper in some places than in others, and it may happen that the grinding afterwards will be unsatisfactory. This is one reason why the common sheet glass is not used by embossers ; its surface being wavy, the acid would lie about in pools, and the biting-in would be irregular. And, again, if the surface had to be obscured, the grinding would be most unsatisfactory, as the projections would receive a portion of the rubbing which ought to belong to the indentations, and different degrees of opacity would be apparent, unless the operator spent a vast amount of time and labour in remedying the defect. After the acid has remained on the glass for half-an-hour, or an hour, it may be drained off.* A breach should be made in the wall of wax at one corner, and the liquid, as it runs off, should be caught in the bottle in which it is kept, as it may be used again and again.

In using fluoric acid the operator must exercise great caution, the properties of the acid being most destructive to animal matter. It should not be permitted to touch the hands, and if by accident it should do so the acid should at once be washed off with cold water,

* The length of time necessary for eating out the pattern depends, of course, upon the strength of the acid and the hardness of the glass, and therefore it is advisable to try a small piece before proceeding with any large or important work.

and the hands wiped dry. The white fumes which arise when the acid is poured on the glass are very dangerous, and must not be inhaled. It is advisable not to hold the head over the glass, because the vapour which arises, and which is not always visible, will enter the system, and will produce in the course of a few hours the most irritating effects, followed by a severe and troublesome headache. As soon, therefore, as the acid is poured on to the glass or in any way exposed to the atmosphere of the workshop, the embosser must keep at a respectful distance from it, if he would avoid the evil consequences which otherwise would be certain to result.

The glass now requires to be carefully cleaned of both the acid and Brünswick black. The former is removed by merely rinsing the glass with cold water; the latter by scraping with a knife, and subsequently by a strong ley or by turpentine, which must in turn be cleansed off with soap and water. This requires very careful management, or the black will cling about in different parts of the design, which is now absolutely bit into the glass, and when the surface is obscured, the fact of its existence will become intensified.

The next process is the grinding or obscuring the glass. This is most readily effected with a flat block of copper, or a slab of ground glass, and fine emery powder, moistened with water, and rubbed with briskness for some time. The glass should be well bedded on some soft material, such as baize or cotton goods, to prevent the pressure from breaking it, which it might do if it were not well supported underneath. The slab, whether it be of copper or glass, must have a perfectly flat surface, or it may touch in some places the parts that have been bit in, and partially obscure or scratch them, rendering opaque points that should be clear and bright. This operation is not difficult, but demands patience and care. It is generally performed by

labourers, and the grinding slab is worked round and round and not in a straight direction. A small piece of glass may be ground in an hour or two; but a square of eight or ten feet will occupy an entire day. The rubbing process is purely mechanical, the only thing required being the exercise of some amount of judgment to ensure that the surface is evenly treated, and not made more opaque in one part than in another. If a part only of the glass has to be obscured, as is most often the case, the greatest nicety is required in rubbing up to the edge of the part to be obscured, so as not to touch the portion to be left perfectly transparent. It is customary for the workman to bite in a line of about a quarter of an inch in width between the portion to be obscured and the untouched polished surface, in order that the grinder may have a margin to work to; otherwise it would be next to impossible to divide, as it were, the obscure from the clear parts. A few wooden moulds and straight edges are serviceable aids in grinding to a given line.

There are different kinds of emery powder used for obscuring; some qualities are very fine and others very coarse; and these must be used according as the glass is required to be very opaque or only just obscured. The coarser the emery the whiter the glass becomes, but the greater is the danger of the grits scratching the design. The quality generally used is the finest. It can be procured at most oil and colour shops. Fine sand is sometimes used for the purpose of obscuring large surfaces. What is called "bird sand" is very effective, or the fine white sand which comes from the forest of Fontainebleau is equally suitable. Many embossers prefer sand to emery, and in some cases it can be used more advantageously. Of course, both the emery powder and sand must be kept well wetted during the process of rubbing, or they will fail to grind off the polish of the glass, and simply scratch the surface,—a result which is to be avoided.

Another method is sometimes adopted for figuring glass. This is to procure a tray made of lead, and to put into it a quantity of fluor spar, or what chemists call fluoride of calcium, finely levigated, and then to pour on the fluor spar some sulphuric acid. The glass having the design executed upon it as already explained, should be placed face downwards over the leaden trough. Heat must then be applied to the bottom of the tray, and this will cause a vapour to arise which will dissolve the glass in the parts which have not been protected by the stopping out medium. The vapour which thus arises is really fluoric acid. This method of procedure is best suited for small pieces of glass, and may be adopted advantageously where fluoric acid cannot readily be obtained.

Fluoride of calcium is useful for another purpose. After the fluoric acid is poured on to the glass, if a little of this pulverised fluor spar be sprinkled on it, the biting in, instead of being clear and even, will be rough and irregular. This will heighten the effect for particular kinds of work, especially when some parts are left clear, and others are gilded.

From the foregoing explanations it will be seen that the *modus operandi* of glass embossing is, first, to cover certain parts of the glass with some resinous or bituminous substance, which is called a ground, and then, to expose the glass to the action of a corrosive fluid, which will dissolve its surface where it has been untouched by the stopping out medium, but will have no effect in those parts which are covered by the ground. The stopping-out material is Brunswick black, and the corroding menstruum fluoric acid.

Then, there are other kinds of glass upon which the embosser can exercise his skill advantageously. Coloured glass is susceptible of much beautiful adornment by means of fluoric acid. The different kinds of coloured glass are called "flushed," "pot metal," and "stained." The red coloured glass, known as "Ruby,"

is perhaps most commonly used, and that is invariably "flushed;" a thin layer of coloured glass being blown upon the ordinary sheet glass, forming, as it were, a sort of thin veneer on one side only. Blue is also generally "flushed." The term "pot metal" is applied to glass which is more or less deeply coloured through its substance by fusion with metallic oxides. "Stained" glass differs somewhat from either of the preceding, the term being applied to the various shades, lemon, yellow, orange, and red (or very dark orange), which are produced by the peculiar dyeing or penetrating action of silver upon white glass after it is blown. They resemble "flushed" colours by being on the surface, but are frequently distributed on each side of the glass, whilst "flashing" is always confined to one side.

The art of embossing coloured glass merely consists in dissolving the thin veneer of colour fused on one side, and leaving the clear glass exposed in those parts from which the colour is removed. That being the case, it is manifest that embossing on either "stained" or "pot metal" glass is out of the question, the colours in the one case being sometimes on both sides, and in the other melted through the entire surface of the material. Ruby and blue which are "flushed," and known as "enamel," or surface colours, are most frequently employed for business purposes, either as lamp glasses or window transparencies, and writing on these colours is easily effected. The lettering is first set out on a sheet of tracing paper of the same size as the glass; the glass is then placed flat upon the paper, which, having been turned over, presents the writing backwards, and the letters are traced on it with a sable pencil charged with Brunswick black. If the letters are intended to be white on the ruby or blue, they must be left open, and the whole of the glass covered with the Brunswick black with the exception of the letters. If, on the other hand, the letters have to be

left red or blue, they alone should be written with the Brunswick black, and the broad surface of the glass left untouched. After the stopping out material—the Brunswick black—is thoroughly dry and hard, a wall of soft wax must be formed round the margin of the glass, and a quantity of fluoric acid poured over the entire surface. In about twenty minutes the enamel which is not covered with the black will begin to dissolve and the white clear glass will become visible. The time occupied in biting off the colour varies according to the hardness and thickness of the veneer, but as a general rule it will take an hour or more. It is often the case that the flashed colour will dissolve more readily in some parts than in others. Hence the workman should watch the action of the acid, and if it is found that one portion of the colour has been burnt off, and the clear white surface of the glass is disclosed, it is better to drain off the acid, stop out the parts where the colour has been removed,—which can be done by covering them with tallow rubbed on with the fingers,—and then renew the application of the corroding medium.

For gilding on embossed glass, the mordant or size should be made a little stronger than for gilding on clear glass. A larger quantity of isinglass should be used, or it will be found that the gold leaf will not adhere readily to the embossed portions of the glass. It should be stated that embossed letters that are intended to be gilded are produced in just the same way as when the glass is intended to be obscured, except that the fluoric acid need not be left on for so long a time, the mere deadening of the surface being all that is required to give the effect of mat gold.

ILLUSTRATED PRICE LIST

OF

BRUSHES, PENCILS,



AND

TOOLS,

USED BY

GRAINERS, PAINTERS, WRITERS, SCENE PAINTERS,
DECORATORS, GILDERS, ETC., ETC.

*WITH PRICES OF ALL REQUISITES USED IN
THE ABOVE TRADES.*

BRODIE & MIDDLETON,

Manufacturers and Importers,

79, LONG ACRE, LONDON.

SEPARATE CATALOGUES CAN BE HAD FOR DEPARTMENTS

No. 1.—Artists' Materials, &c.

INDEX.

	PAGE.
Badger Softeners	10, 39, 40
" Poonah	40
Bears' Hair Varnish Brushes	36
Blenders' Sable	23
Blowing Apparatus	21
Bordering Brushes	40
Burnishers	32
Camel-hair Pencils	27, 28, 29
Candlestick	24
Caning Tubes	33
Colors, Oil	30
Color Mills	22
Combs—Steel, Leather, &c. . . .	11, 12
" for dividing Over-grainers	13
Copper-bound Ground Brushes	16
" Ground Distemper	17
Cotton Wool	27
Dabbers	31
Dippers	25
Dotters—Maple, Camel-hair	11
Dusters	16
Flat French Tools	19, 37
Flat and Round Sables, in Tin	38
Floggers	13
Gilders' Tips	31
" Cushions	32
" Knives	32
Gold Size	26
" Leaf	27
Graining Rollers	15
Ground Brushes	16
Hog-hair Softeners	11
Horn Combs	11
India Rubber Combs	12
Japanners' Pencils	28
Knives, Palette	19
" Stepping	19
" Trowel	20
" Chisel	20
" Putty	20
" Hacking	20
Leather Combs	12
Lining Tools	14, 18
Maple Eye Shaders	11
Mahl Sticks	25
Marking Brushes	40
Mops, in Quill	31

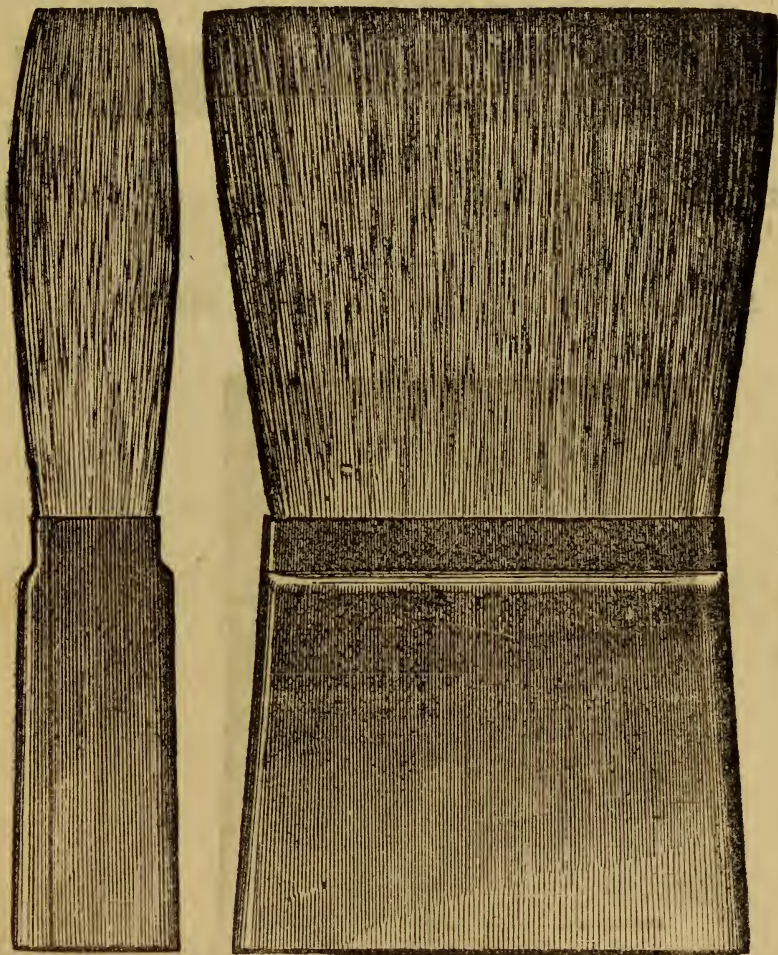
	PAGE.
Mottlers, Hog-hair, Extra Double Thick	3
" " Double Thick	4
" " Single Thick	4
" " Chisel Edge	4
" Camel-hair	5
" " Burnt Edges	5
" " Feather "	5
" " Wave	5
" " Wavy	6
Oak Over-combing Tools	14
Over-grainers, Hog-hair, Thin	6
" " Thick	7
" " in Wood	7
" " in Knots	8
" " in Tubes	9
" Sable, in Tubes	9
" " Solid	10
" Camel-hair, in Tubes	9
" Fitch	20
Palettes	25
Paper Hangers' Rollers	21
" Scissors	20
Parchment Cuttings	27
Pencil Cases, Round and Oval	26
Pipe Clay	27
Poonah Brushes	12
Quilled Tools	21
Round Badger Softeners	10
Round and Flat Hog-hair Tools	37
Sable Writers and Liners	23, 24
Sables, in Tin	38
Sash Tools	27
Scene Painters' Tools	34, 35
" Colors	35
Steel Combs	11
Stenciling Brushes	17
Stippling "	18
Tar Brushes	17
Thumb Pieces	13
Tissue Paper	27
Varnish Brushes	35, 36
" " Flat Camel-hair	39
" " Round	39
Veining Horns	12
" Fitches	14
Wall Liners, Hog-hair	13
Writers' Boxes	28

GRAINERS' BRUSHES, &c.

No. 1.—EXTRA DOUBLE THICK HOG-HAIR MOTTTLERS.

The Extra Thick, Double Thick, and Single Thick Mottles, are all used for Maple.

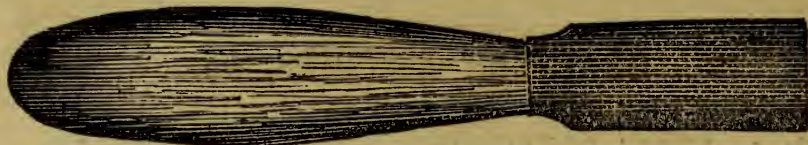
The best method to preserve these Tools is to wash them in clean water, after working, and let them dry thoroughly, as the hairs have a tendency to decay, and, as when used, the hairs are found to break off and spoil the work.



END VIEW, SHEWING THICKNESS.

7/-	10/6	14/-	17/6	21/-	24/6	28/-	35/-	42/-	dozen.
1	1½	2	2½	3	3½	4	5	6	inch.

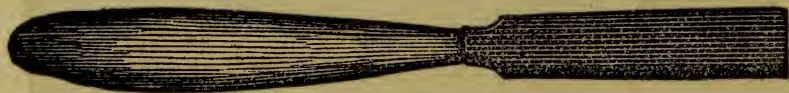
No. 2.—DOUBLE THICK HOG-HAIR MOTTLETS.



END VIEW, SHEWING THICKNESS.

6/-	9/-	12/-	15/-	18/-	21/-	24/-	27/-	30/-	36/-	dozen.
I	1½	2	2½	3	3½	4	4½	5	6	inch.

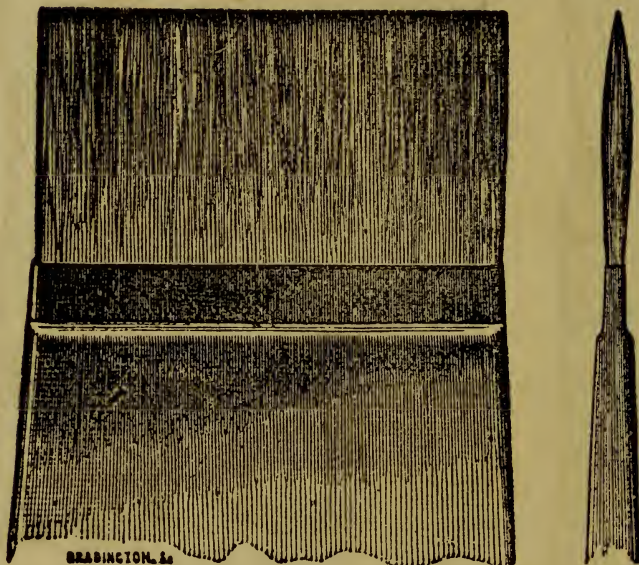
No. 3.—SINGLE THICK HOG-HAIR MOTTLETS.



END VIEW, SHEWING THICKNESS.

5/-	7/6	10/-	12/6	15/-	17/6	20/-	22/6	25/-	30/-	dozen.
I	1½	2	2½	3	3½	4	4½	5	6	inch.

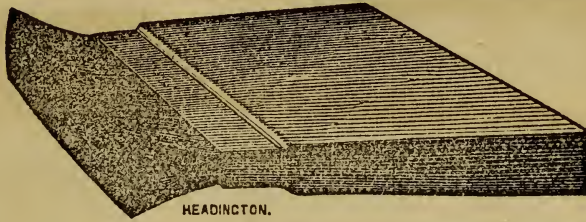
No. 4.—CHISEL EDGE HOG-HAIR MOTTLETS,
OR CUTTERS.



Chiefly used for Satinwood and Mahogany—the smaller sizes as eye tools.

3/-	4/6	5/-	7/6	10/-	12/6	15/-	17/6	20/-	dozen.
½	¾	I	1½	2	2½	3	3½	4	inch.

No. 5.—CAMEL-HAIR MOTTLETS.

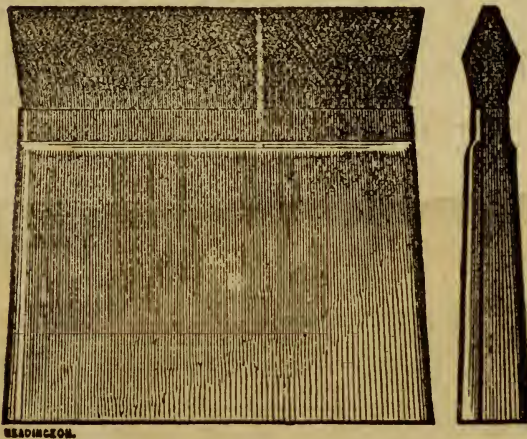


5/-	7/6	10/-	12/6	15/-	17/6	20/-	dozen.
1	1½	2	2½	3	3½	4	inch.

Used chiefly for soft woods.

No. 6.—CAMEL-HAIR MOTTLETS,

BURNT EDGES.



5/-	7/6	10/-	12/6	15/-	17/6	20/-	dozen.
1	1½	2	2½	3	3½	4	inch.

No. 7.—CAMEL-HAIR MOTTLETS,

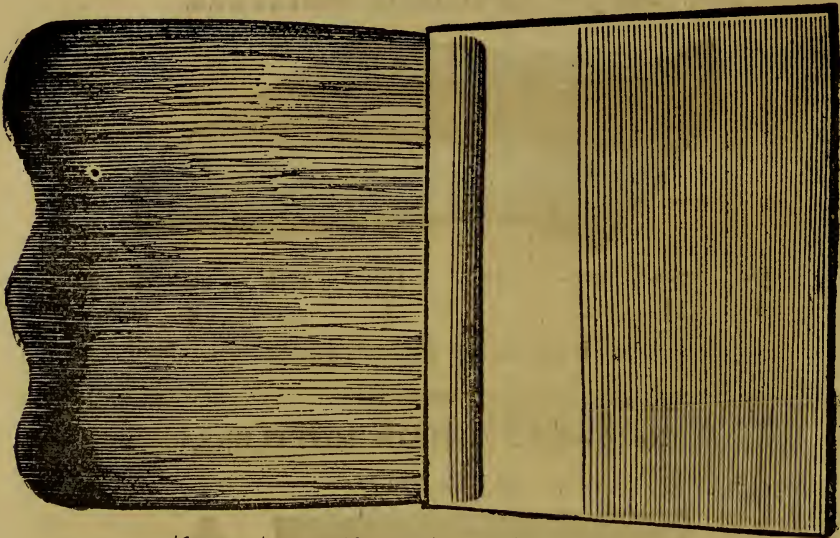
FEATHER EDGE.

5/-	7/6	10/-	12/6	15/-	17/6	20/-	dozen.
1	1½	2	2½	3	3½	4	inch.

No. 8.—WAVE MOTTLETS (HOG-HAIR).

10/6	14/-	17/6	21/-	24/6	28/-	dozen.
1½	2	2½	3	3½	4	inch.

No. 9.—WAVY GRAINERS (HOG-HAIR).

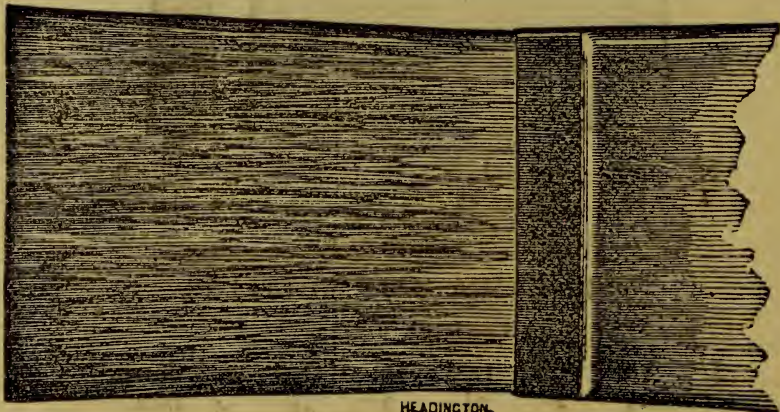


10/6	14/-	17/6	21/-	24/6	28/- dozen.
1½	2	2½	3	3½	4 inch.

No. 10.—THIN HOG-HAIR OVER-GRAINERS,
IN TIN.



END
VIEW.

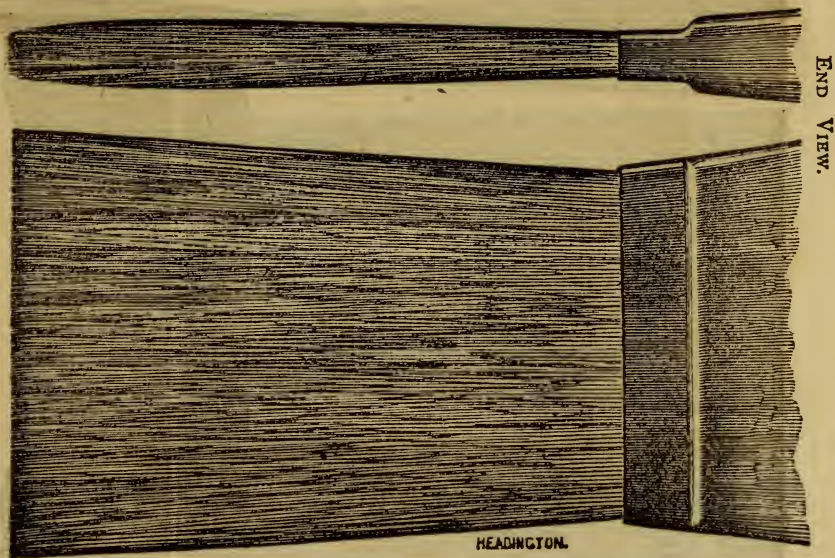


4/-	6/-	8/-	10/-	12/-	14/-	16/- dozen.
1	1½	2	2½	3	3½	4 inch.

HEADINGTON.

These Overgrainers are much used for Maple, and can also be used for over-graining any wood where fine lines are required. With a comb, the hair may be divided into very fine pencil points. To preserve, see Fig 1.

No. 11.—THICK HOG-HAIR, OR OAK, OVER-GRAINERS,
IN TIN.

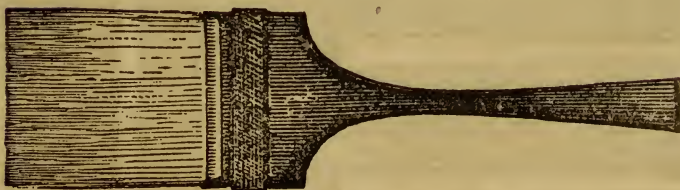


7/6	10/-	12/6	15/-	17/6	20/-	25/-	30/-	dozen.
1½	2	2½	3	3½	4	5	6	inch.

To preserve the Over-grainers—see note under fig 1.

No. 12.—OAK OVER-GRAINERS,

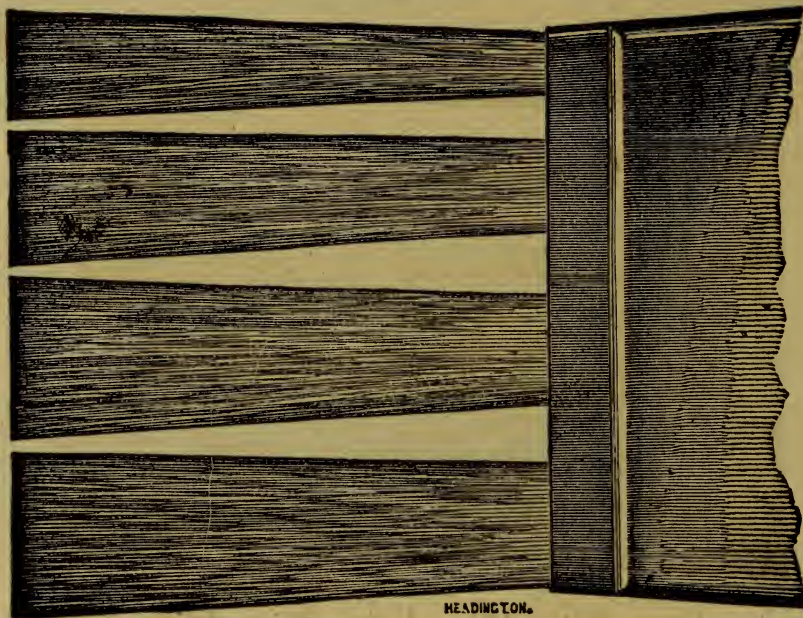
IN WOOD.



25/-	30/-	35/-	40/-	50/-	60/-	dozen.
2½	3	3½	4	5	6	inch.

To preserve, see note under fig 1, at the same time preventing the handle getting too wet.

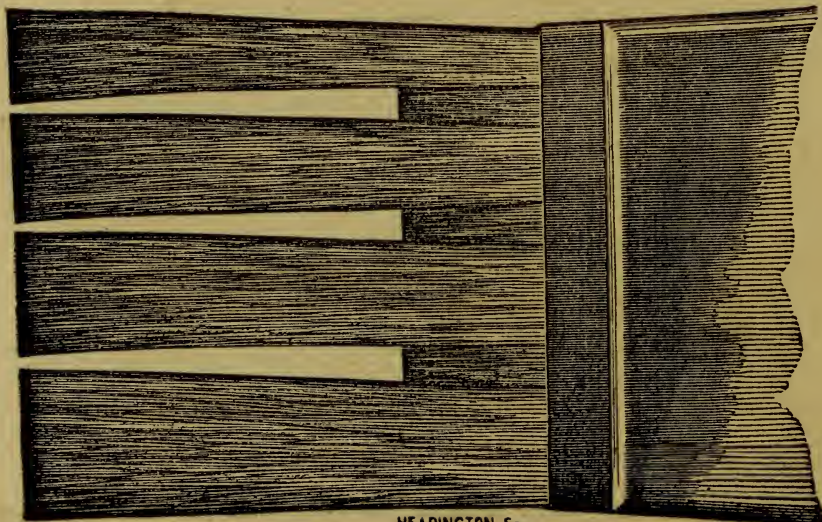
No. 13.—OAK OVER-GRAINERS,
IN KNOTS



HEADINGTON.

9/-	11/6	13/6	16/-	18/- dozen.
2	2½	3	3½	4 inch.

No. 14.—CASTELLATED OAK STRIPERS (HOG-HAIR.)

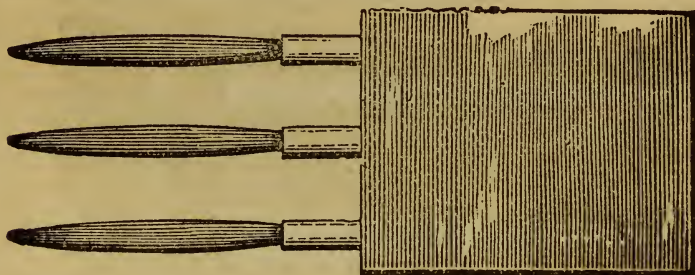


HEADINGTON. Sc.

7/6	10/-	12/6	15/-	17/6	20/- dozen.
1½	2	2½	3	3½	4 inch.

To preserve, see note under fig 1.

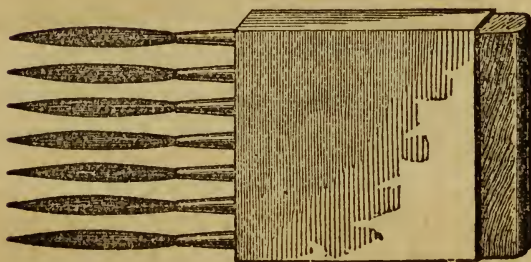
No. 15.—HOG-HAIR OVER-GRAINERS,
IN TUBES.



8/-	12/-	16/-	20/-	24/-	30/-	36/-	dozen.
1	1½	2	2½	3	3½	4	inch.

No. 16.—SABLE OVER-GRAINERS,
IN TUBES.

Used generally for Maple.



	1	1½	2	2½	3	3½	4 inch
Four Tubes to the inch—	18/-	27/-	36/-	45/-	54/-	63/-	72/- doz.
Five „ „	—21/-	31/6	42/-	52/6	63/-	73/6	84/- „
Six „ „	—24/-	36/-	48/-	60/-	72/-	84/-	96/- „

To keep them in working order, they should be washed and then wiped on a nearly dry sponge, and kept dry with the pencils pointed.

No. 17.—CAMEL-HAIR OVER-GRAINERS,

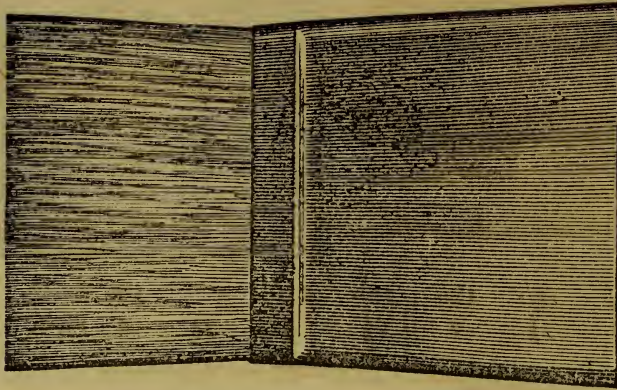
In Tubes—as Fig 16.

	1	1½	2	2½	3	3½	4 inch
Four Tubes to the inch—	12/-	18/-	24/-	30/-	36/-	42/-	48/- doz.
Five „ „	—9/-	13/6	18/-	22/6	27/-	31/6	36/- „

No. 18.—SABLE OVER-GRAINERS,

THICK OR SOLID.

Used generally for Maple.



With a comb, the hair may be divided into very fine pencil points.

18/-	27/-	36/-	45/-	54/-	63/-	72/- dozen.
1	1½	2	2½	3	3½	4 inch.

NOTE.—These Brushes should be washed in clean water—then combed, and laid on a flat surface, smoothing the hair with back of the comb; then lift the brush with a sliding motion in the direction of the hair, in order to keep its shape and let it dry.

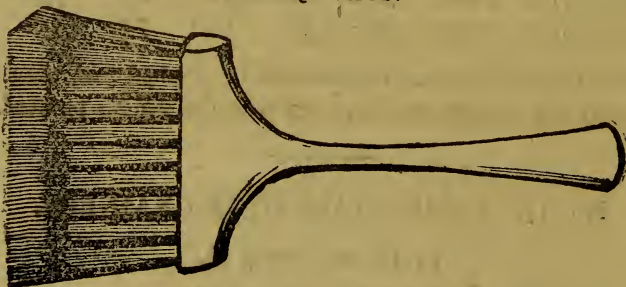
No. 19.—ROSEWOOD FITCH HAIR OVER-GRAINERS,

Or Chair Grainers—As Fig 18.

8/-	12/-	16/-	20/-	24/-	30/-	36/- dozen.
1	1½	2	2½	3	3½	4 inch.

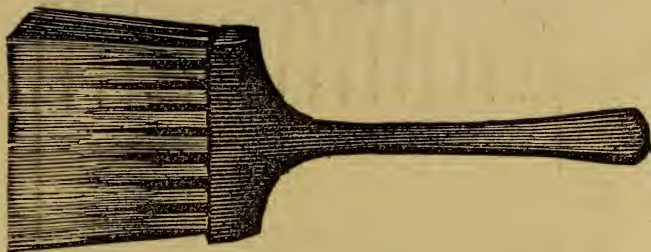
No. 20.—BADGER-HAIR SOFTENERS, OR BLENDERS.

BEST QUALITY.



36/-	48/-	66/-	90/-	114/-	132/-	156/- dozen.
0	1	2	3	4	5	6 Nos.
2	2½	3	3½	4	4½	5 inch.

No. 21.—HOG-HAIR SOFTENERS, OR BLENDERS,
FOR MARBLE.



24/-	30/-	36/-	42/-	48/-	54/-	dozen.
1	2	3	4	5	6	inch.

No. 22.—MAPLE EYE DOTTERS.



Small, 2/- doz.; Middle, 3/- doz.; Large, 4/- doz.

No. 23.—MAPLE EYE SHADERS (HOG-HAIR).



3/- doz., either Small, Middle, or Large.

No. 24.—STEEL GRAINING COMBS.



1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, and 6 inch. 1½d. per inch.

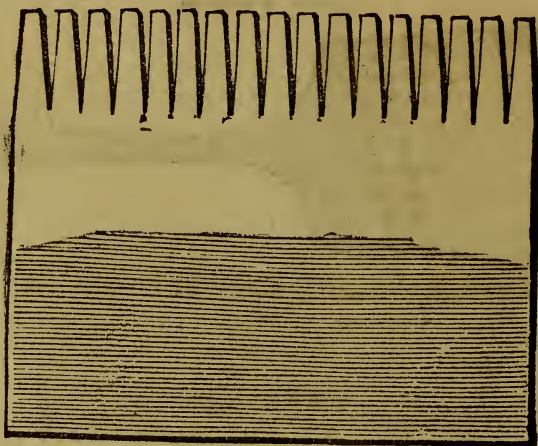
Per Set of 3 each 1, 2, 3, 4, inch, in Case, 3/9.

The above Combs are cut 6, 9, 12, and 15 Teeth to the inch.

No. 25.—HORN COMBS.

1/6	2/6	3/-	4/-	4/6	5/6	6/-	7/6	9/-	dozen.
1	1½	2	2½	3	3½	4	5	6	inch.

No. 26.—LEATHER COMBS.



Graduated			4/6	5/-	6/- dozen.
Coarse, Middle, or Fine,	2/6	3/-	3/6	4/-	4/6 „
	2	2½	3	3½	4 inch.

These are made of stout Leather, cut by Machinery.

No. 27.—INDIA RUBBER GRAINING COMB,

Is the only Comb that will Comb Oak in Water Color, and is most useful in connection with the PATENT GRAINING ROLLERS.

By this Comb a much more natural and correct imitation is produced than anything hitherto attained, being superior to ordinary Oil Combing.

They are made in sizes 2, 3, 4, 5, and 6 inches. The teeth cut as follows :—

No. 1 fine, about 12 to the inch.

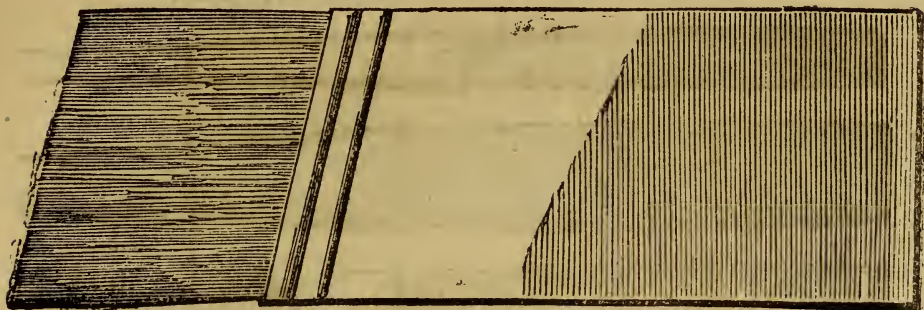
No. 2 medium „ 9 „ „

No. 28.—THUMB PIECES, OR VEINING HORNS.



Small, 1/6 doz.; Middle, 4-inch, 2/- doz.; Large, 2/6 doz.

No. 29.—WALL LINERS (HOG-HAIR).

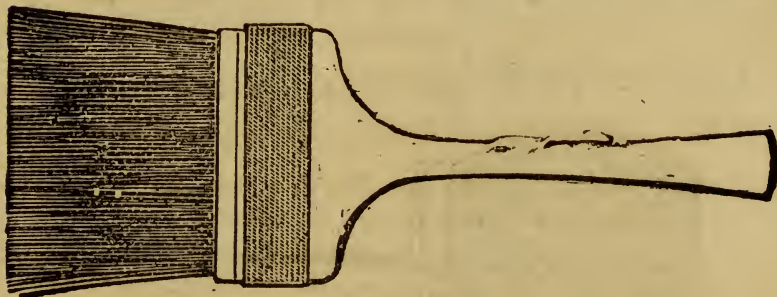


5/-	7/6	10/-	12/6	15/-	17/6	20/-	dozen.
1	1½	2	2½	3	3½	4	inch.

OLD SHAPE.

3/-	4/6	6/-	7/6	9/-	10/6	12/-	dozen.
1	1½	2	2½	3	3½	4	inch.

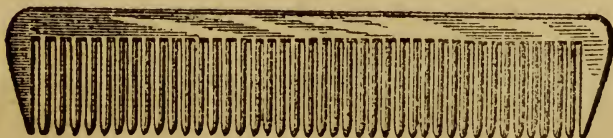
No. 30.—FLOGGING, OR, OAK MATTING TOOLS.



30/-	35/-	40/-	45/-	50/-	60/-	dozen.
3	3½	4	4½	5	6	inch.

Used chiefly by Japanners for Oak

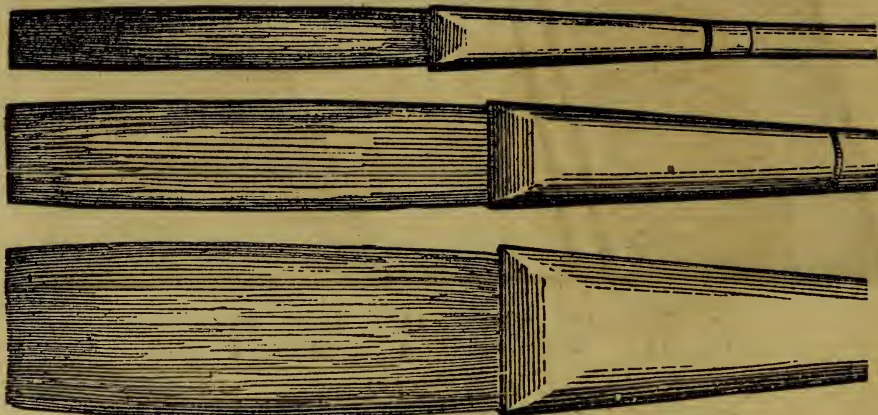
No. 31.—COMBS FOR DIVIDING OVER-GRAINERS.



Single, 5/- doz. Double, 6/- doz.

The single combs are 6 inches long, and have the same teeth throughout as in the engraving. The double are 7 inches long, one-half being fine and the other coarse, like a dressing comb, but the teeth are cut in such a manner as to cause the hair to divide with a sharp edge at the points.

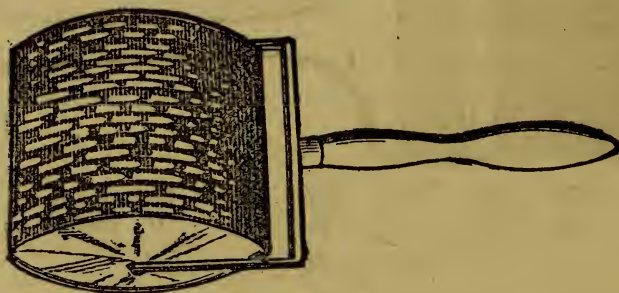
No. 32.—LINING OR VEINING FITCHES.



The above three cuts represent No. 3, 6, 9.

	2/6	2/6	3/-	3/-	3/6	4/-	4/6	5/-	6/-	7/-	8/-	doz.
No. 1	2	3	4	5	6	7	8	9	10	12		

No. 33.—PATENT OAK OVER-COMBING TOOLS,



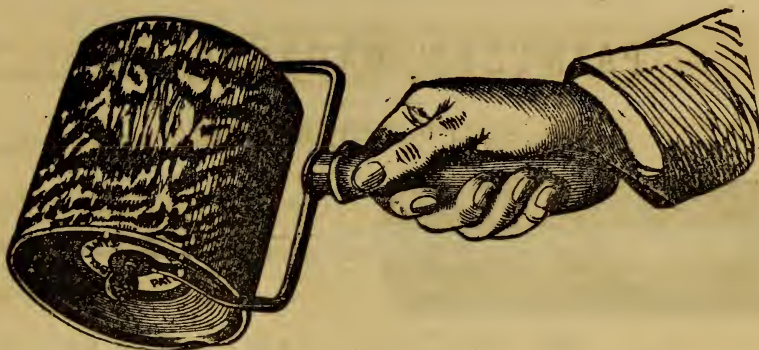
FOR PUTTING IN THE BATES OR PORES OF THE WOOD.

Price 25/- the set of five pieces.

DIRECTIONS FOR USING THEM.—When you have rubbed your work in with Oil Graining, cleaned, and veined it, without combing whatever, leave it to dry; then with a Distemper Tool and Vandyke Brown in water, instead of beer, coat nicely the part to be over-combed, not too wet, but so that you can comb it with the India Rubber, according to your own taste; this done, use one of the sizes of Rollers most suitable for the work you are doing, which will soak up and entirely take out the straight lines, breaking them, and giving them that woody and real appearance of the finest Dantzic Oak. For Shop Shutters and all surfaces you can with cleanliness grain all in Distemper. Tops and bottoms of panels, corners, and different places, use the Half Roller, which you will appreciate the more you practice. The Rollers are used damp, not wet, cleaning off with sponge and dry wash leather, as you proceed with your work. Slight practice will teach you.

For further particulars see Painters' & Grainers' Hand Book. Cloth Bound, 3s., Illustrated.

No. 34.—PATENT GRAINING ROLLERS.



The apparatus consists of a Frame and Revolving Cylinder, the figure of the wood to be represented being cut on the surface of the Cylinder. The designs are of the choicest description. The Apparatus is very durable and expeditious, and has been found to give universal satisfaction. The construction of the Tools are made so as to Grain work of any length or width. Full printed particulars and directions for use will be sent with the Tools.

A description of the WOODS and MARBLES for which the PATENT GRAINING TOOLS are applicable:—

SPANISH MAHOGANY and Satin-wood Mottles

Ditto Heart over-grain

Ditto Feathers

MAPLE Mottles

OAK Light Veins

Ditto Dark Veins

Ditto Hearts

Ditto Knotted and Pollard

WALNUT

BIRCH Mottles

BIRCH Heart Over-grain

TULIP

HUNGARIAN ASH

HAIR WOOD

JASPER MARBLE

ROUGE ROYAL MARBLE

VEIN MARBLE, for White, Dove,

Sienna, Black and Gold, and Italian

Pink

For further particulars see the Painters' and Grainers' Hand Book, 2s.

Price, 3-in., 16/-; 4-in., 18/-; 5-in., 22/-; 6-in., 26/- each. Mahogany Feathers, 26/-, 30/-, and 37/- each.

LARGER SIZES MADE TO ORDER.

Any of the above Tools will answer for Panels and Style Work generally; smaller sizes are also kept in Stock for Styles, Margins, Frames, Small Panels, Furniture, and all small portions of Woodwork generally.

Price 10/- and 12/- each.

INSTRUCTIONS FOR USING THE PATENT GRAINING TOOLS,
IN WATER COLOR ONLY.

The principal thing to be observed is Cleanliness. Wet them well with sponge and water; have a wash leather wetted, and wring it nearly dry, then spread it on any flat surface ready to run the tool over, to clean it, as it gets charged with colour in using; then lay on your color mixed in beer in the usual way, on the painted wood work, and pass over it with the tool which produces the figure of the wood it is to represent; then soften it with a Badger-hair Brush. This being done, the work is ready for Over-graining.

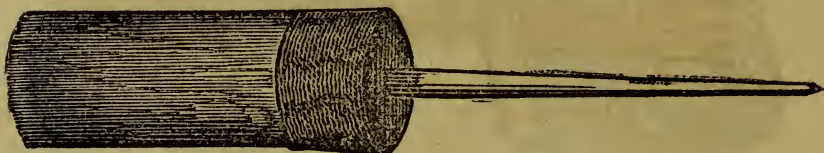
THE FOLLOWING WILL BE FOUND A READY AND CLEAN SYSTEM
OF GRAINING WORK GENERALLY.

First Grain all your Panels, Styles, Frames, &c., leaving all Mouldings, Edges, &c. to be done last, using for that purpose a small thin one inch and a half Hog-hair Mottler.

Be careful to clean the tools, and not allow them to remain packed inside each other while wet, as they will last much longer if kept dry when not in use.

PAINTERS' BRUSHES, &c.

No. 35.—GROUND BRUSHES.



	8-0	6-0	4-0	3-0	2-0	1-0	
Lily Hair—	50/-	44/-	38/-	34/-	30/-	30/-	dozen.
Grey Middles—	48/-	42/-	36/-	32/-	28/-	28/-	„

No. 36.—OVAL GROUND BRUSHES.

STRING BOUND.



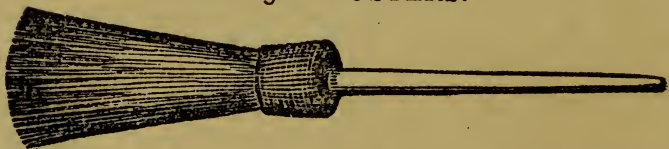
	8-0	6-0	4-0	3-0	
Lily Hair—	66/-	57/-	51/-	46/-	dozen.
Grey Middles—	60/-	51/-	42/-	40/-	„

No. 37.—COPPER-BOUND OVAL GROUND BRUSHES.



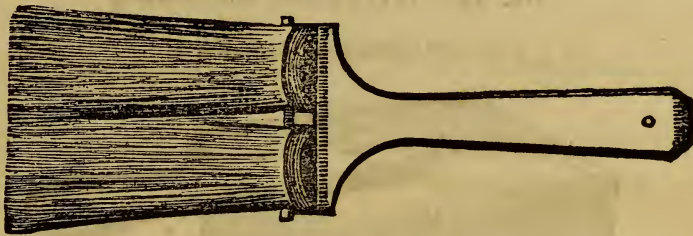
	8-0	6-0	4-0	3-0	
Lily Hair—	66/-	57/-	51/-	48/-	dozen.
Grey Middles—	60/-	54/-	46/-	44/-	„

No. 38.—DUSTERS.



	8-0	6-0	4-0	3-0	2-0	
6½-inch Hair—	46/-	40/-	34/-	32/-	28/-	dozen.
7-inch „	48/-	42/-	38/-			„

No. 39.—COPPER-BOUND GROUND DISTEMPER BRUSHES.



	8-oz.	10-oz.	12-oz.
6-inch Hair—	54/-	60/-	70/- dozen.
6½ „	60/-	66/-	80/- „
Unground, 3/- per dozen less.			

No. 40.—SASH TOOLS.

STRING BOUND.



2/-	2/6	3/-	4/-	5/-	6/-	8/-	10/6	13/-	16/-	20/-	24/- doz.
No. 0	1	2	3	4	5	6	7	8	9	10	12

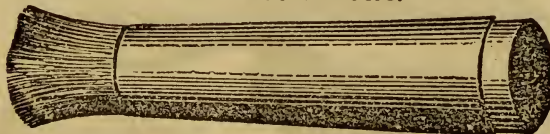
No. 41.—TAR BRUSHES.



<i>Short Handle.</i> —8/-				14/- dozen.				<i>Long Handle.</i> —12/-				16/- dozen.
No. 1				2				No. 1				2

No. 42.—BEST STENCILLING BRUSHES,

FOR DECORATORS.



2/-	3/-	4/-	5/-	6/-	7/-	8/-	10/-	12/-	14/-	16/-	18/- doz
No. 1	2	3	4	5	6	7	8	9	10	11	12

No. 43.—ROUND STENCILLING BRUSHES.

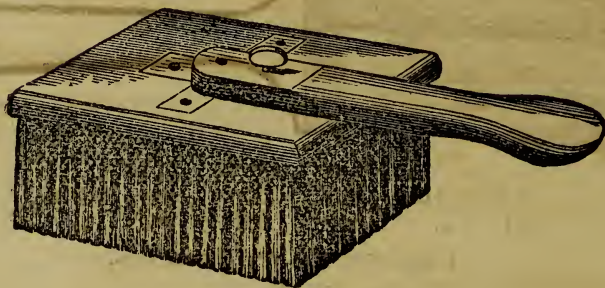
SET IN KNOTS.

FOR DECORATORS.

2/-	3/6	5/-	7/-	9/-	each.
2	2½	3	3½	4	inch.

No. 44.—STIPPLING BRUSHES,

REVERSIBLE HANDLE.



The above cut represents a Stippler, the plan of which, when once known, will recommend itself to every painter.

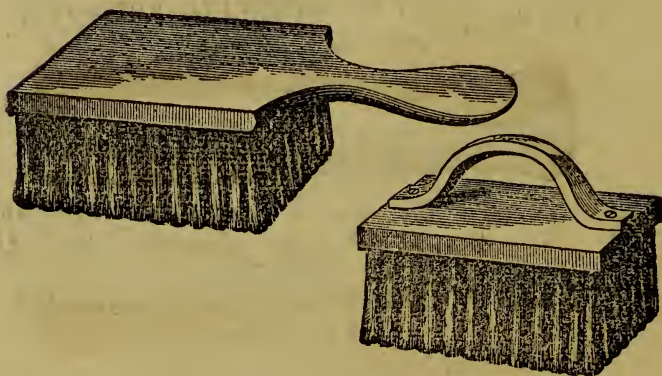
Reversible Stipplers, on this principle, have now been in use for some years past by a celebrated Decorator, who claims to be the originator of the design.

The above handle will be found superior to all others, it being firmer than any of the Reversible Stippler Handles now being used.

The advantages are :—

- 1.—By loosening the thumb screw, the handle can be turned in any position, and by so doing, the Brush can be evenly worn over its whole surface.
- 2.—The Reversible Stippler will last much longer than those with the fixed handle.

10/6	13/-	18/- each.
5 × 5	6 × 6	7 × 7 inches.



5/-	7/6	10/-	13/-	16/6 each.
5 + 3	6 × 4	7 × 5	8 × 6	9 × 7 inches.

No. 45.—LONG-HAIRED FLAT FRENCH TOOLS.

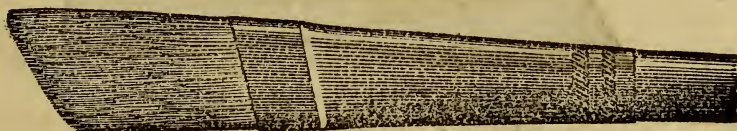
Same sizes as Fig. 1.



No. 1	3/-	3/-	4/-	4/-	4/6	5/-	6/-	7/-	8/-	9/-	10/-	doz.
	2	2	3	4	5	6	7	8	9	10	12	

No. 46.—HOG-HAIR LINING TOOLS,

FOR DECORATORS.



Same sizes as Fig. 1.

No. 1	3/-	3/-	4/-	4/-	4/6	5/-	6/-	7/-	8/-	9/-	10/-	doz.
	2	2	3	4	5	6	7	8	9	10	12	

No. 47.—STONE KNIVES.



4	5	6	7	8	9	10	11	12	13	14	15	16 inch.
6d.	7d.	8d.	11d.	1/2	1/6	2/-	2/6	3/-	3/6	4/-	4/9	5/3 each.

No. 48.—PAINTERS' PUTTY OR STOPPING KNIVES,

EBONY HANDLE.



9/-	10/-	12/-	14/-	16/-	doz.
4	4½	5	5½	6	inch.

No. 48a.—PLAIN COCOA HANDLE.



8/-	9/-	10/-	12/-	14/-	dozen.
4	4½	5	5½	6	inch.

No. 49.—TROWEL STOPPING KNIVES.



12/-	14/-	16/-	18/-	dozen.
4½	5	5½	6	inch.

No. 50.—CHISEL KNIVES.



10/-	12/-	14/-	16/-	dozen.
4½	5	5½	6	inch.

No. 51.—GLAZIERS' PUTTY KNIVES.

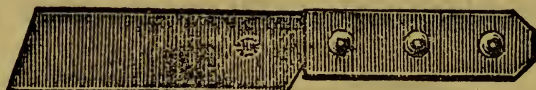


Best Plain, 9/- dozen.



Notched, 10/6 dozen.

No. 52.—GLAZIERS' HACKING KNIVES.



Small, 7/- dozen ; Large, 10/- dozen.

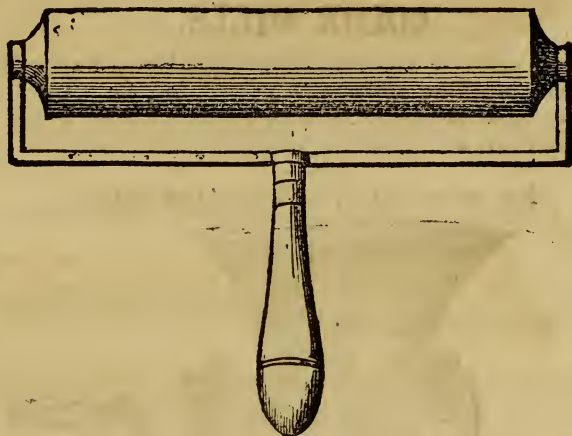
No. 53.—PAPER HANGERS' SCISSORS.



42/-	52/-	60/-	dozen.
10	11	12	inch.

No. 54.—PAPER HANGERS' ROLLER.

BRASS FRAME.



2/-	2/-	2/6	3/- each.
3	4	6	7 inch.

Iron Frame, 3d. each less.

No. 55.—PATENT SELF-ACTING BLOWING APPARATUS,

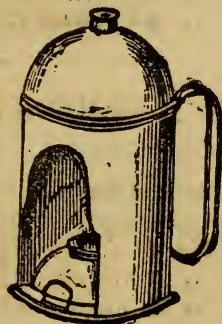
For Gas Fitters, Plumbers, Braziers, Painters, &c.

A Safety Valve is adapted to each Apparatus

DIRECTIONS FOR THE MANAGEMENT OF THE SELF-ACTING BLOWING APPARATUS.

Half fill the Boiler with Methylated Spirit, and fill the Lamp with the same, using a piece of common lamp cotton for the Wick, in about half a minute or a minute from the time of lighting the blast will be emitted, and may be directed to any required point. Keep the Wick well in front of the jet to prevent the blast from jumping. By pulling up the Wick a stronger blast may be obtained.

To extinguish it, blow gently on the flame of the lamp from beneath.



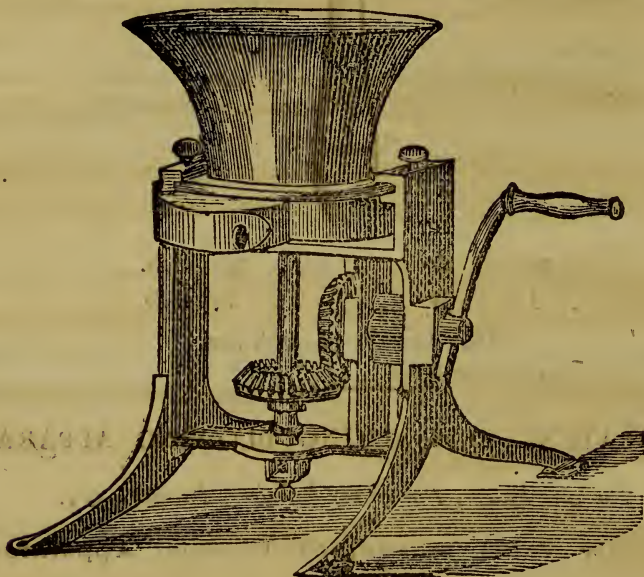
No. 1.	5s. 6d. each,	will burn	three-quarters of an hour.
" 2.	6s. 6d. "	"	one hour.
" 3.	7s. 6d. "	"	one hour and a quarter.
" 4.	10s. "	"	one hour and a half.
" 5.	15s. "	"	one hour and three-quarters.

Extra Boilers for Burning off Paint, 3s. to 7s. 6d. each, extra.

GRAINERS', PAINTERS', AND DECORATORS' COLOR MILLS.

These Mills are used by Painters, Coach Builders, Paper Stainers, Ink Makers, Japanners, Machine Makers, Wheelwrights, &c. In these Mills you can grind large or small quantities to any degree of fineness—they save a great deal of time and labour, and make the Paint go further and look much better.

No. 56.—PAINT OR COLOR MILL.

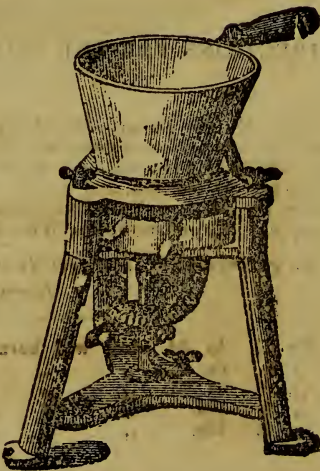


No. 1, £4 10s. No. 2, £8 10s. No. 3, £23 10s.

Improved Paint Mill.	Grinding surface.	Hopper to hold.
No. 1	7-in. diameter	1 Gallon.
„ 2	10 „	3 „
„ 3, for Power 18	„	10 „

No. 57.—AMERICAN PAINT OR COLOR MILL.

American Paint Mill.	Grinding surface.	Hopper to hold.
No. 1	6½-in. diameter	1 Quart.
„ 2	7½ „	2 „
„ 3	11 „	3 Gallons



No. 1, £2 17s. 6d. No. 2, £3 10s. No. 3, £6.

WRITERS' AND COACH PAINTERS' BRUSHES, &c.

No. 58.—SABLE-HAIR WRITING PENCILS.



CROW QUILL.



DUCK QUILL.



GOOSE QUILL.



FULL GOOSE QUILL.



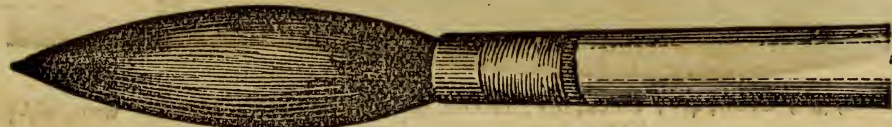
SWAN QUILL.



MIDDLE SWAN QUILL.

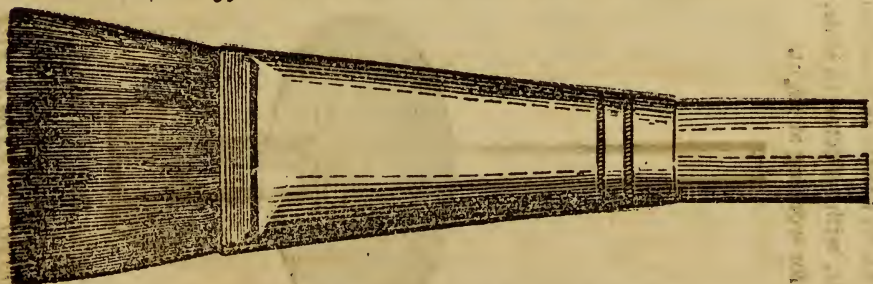


LARGE SWAN QUILL.



Lark, 3/- ; Crow, 4/- ; Duck, 6/- ; Goose, 10/- ; Extra Goose, 15/- ; Small Swan Quill, 24/- ; Middle Swan Quill, 36/- ; Large Swan Quill, 48/- per doz.

No. 59.—WRITERS' BLENDERS (SABLE).



1/-, 1/4, 1/8, 2/6, 3/-, 3/6 and 4/- each.

-BRODIE & MIDDLETON, 79, LONG ACRE, LONDON.

No. 60.—SABLE LINERS, OR TRACING PENCILS.
FINE.



CROW QUILL.



DUCK QUILL.



GOOSE QUILL.



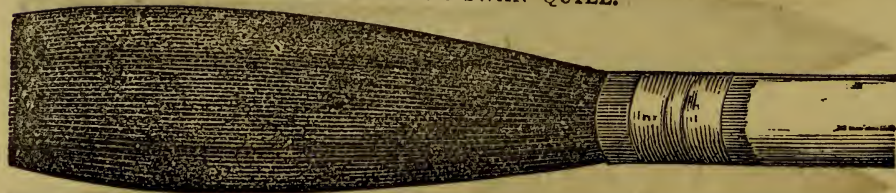
SWAN QUILL.



MIDDLE SWAN QUILL.



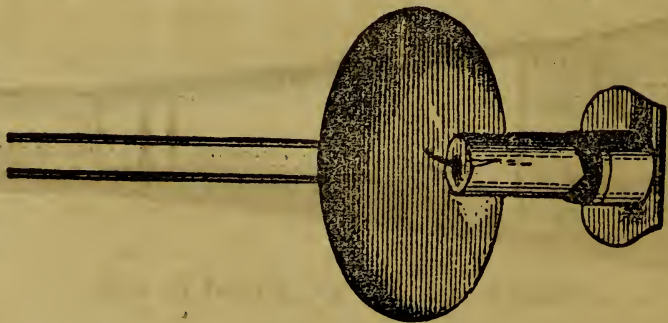
EXTRA LARGE SWAN QUILL.



Fine, 3/-; Crow, 4/-; Duck, 6/-; Goose, 9/-; Swan, 27/-; Middle Swan, 36/-;
Extra Large Swan, 60/- per doz.

Intermediate sizes can be had at 12/-, 15/-, 18/-, 24/-, 30/- per doz.

No. 61.—CANDLESTICK.



FOR WRITERS, DECORATORS,
TORS, &c.
One Shilling each.

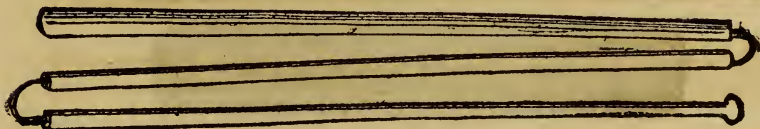
To fix on palette or stand on
table, with reflector to slide,
for working at night.

No. 62.—MAHL, OR REST STICK,

From 6d. each.

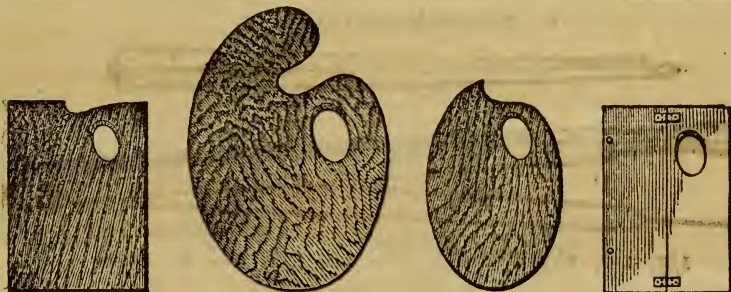
No. 63.—FOLDING MAHL STICKS,

3/- each.



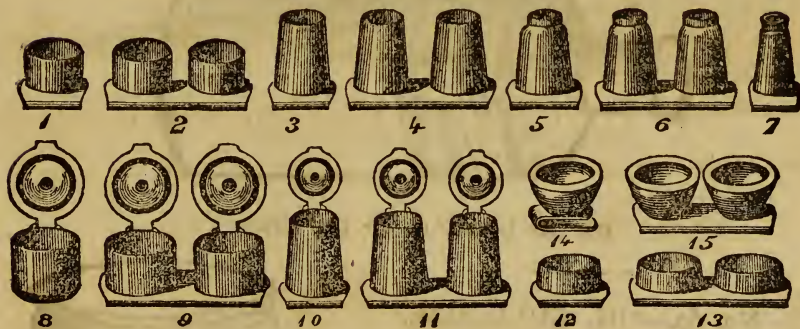
No. 64.—MAHOGANY PALETTE BOARDS,

OBLONG AND OVAL.



6d., 8d., 9d., 1/-, 1/4, 1/6, 1/9, 2/-, and 2/6 each.

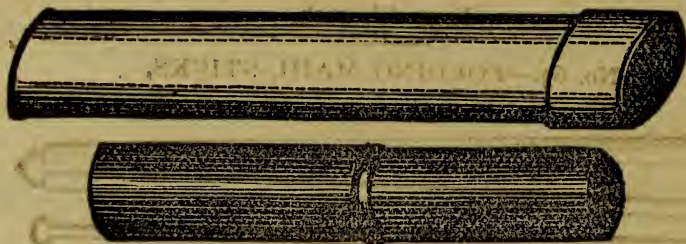
No. 65.—DIPPERS.



No.		PLAIN.		JAPAN'D		No.		PLAIN.		JAPAN'D	
		s.	d.	s.	d.			s.	d.	s.	d.
1	Single Tin Dippers	0	2½	0	6	9	Double Dippers with	1	6		
2	Double ditto	0	5	1	0		Capped Lid	0	8	1	0
3	Single Conical ditto....	0	2½	0	6	10	Single Conical ditto....	1	4	2	8
4	Double ditto ditto	0	5	1	0	11	Double ditto ditto	0	3	0	6
5	Single ditto with Neck	0	5	0	9	12	Single Shallow Tin Dip-	0	6	1	0
6	Double ditto with Neck	0	10	1	3		pers.....	0	8	1	0
7	Single ditto with Screw	0	8	1	4	13	Double ditto ditto	0	8	1	0
8	Single ditto with Capped	0	9			14	Single Dipper, with	0	8	1	0
	Lid	0	9			15	Rim.....	1	4	2	0
							Double ditto ditto				

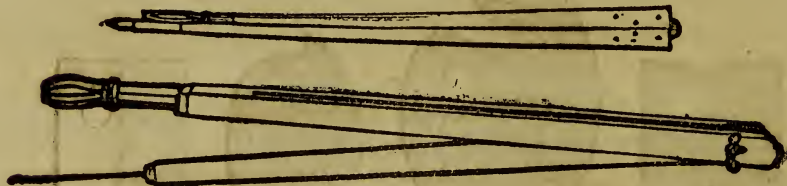
BRODIE & MIDDLETON, 79, LONG ACRE, LONDON.

No. 66.—OVAL AND ROUND TIN CASES,
FOR PENCILS, ETC.



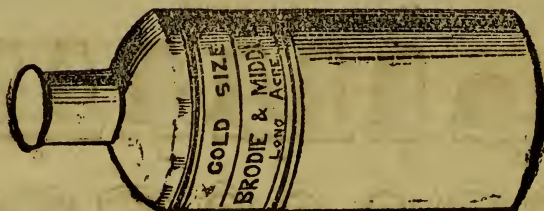
4d., 6d., 1/-, 1/3, 1/6, 1/9, and 2/- each.

No. 67.—WRITERS' AND DECORATORS' WOOD COMPASSES,
VARIOUS PATTERNS.



1/3, 1/6, 1/9, 2/-, 2/3, 2/6, 3/-, 3/6, and 4/- each.

No. 68.—WRITERS' GOLD SIZE.



9d. per bottle, or 4/- per quart.

No. 69.—OIL GOLD SIZE.

*Best Oil Gold Size kept ready for use, and
thick in pots, 1-oz., 2-oz., 4-oz., 6-oz., 8-oz., 12-oz.,
and 16-oz.*

3d., 4½d., 7½d., 1/-, 1/3, 2/-, and 2/6 each.

Matt Size, 1/- lb. Burnish Size, 1/- lb.



No. 70.—COTTON WOOL, 2/6 per lb.

No. 71.—PARCHMENT CUTTINGS, 1/- per lb.

No. 72.—PIPE CLAY, in Sticks, 3d. per doz.

No. 73.—TISSUE PAPER, 6d. per Quire.

No. 74.—GOLD LEAF.

Deep Full Size, 1/3 per book, 49/- thousand.

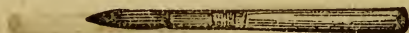
Pale ditto 1/2 „

Half-gold ditto 6d. „

Dutch Metal 2d. „

No. 75.—CAMEL-HAIR PENCILS, SHORT.

CROW.



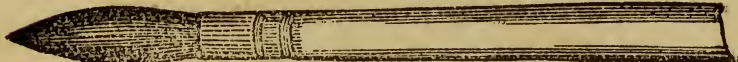
DUCK.



GOOSE.



FULL GOOSE.

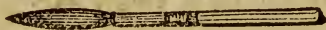


Crow, 8/-; Duck, 8/-; Goose, 10/-; Full Goose, 12/-.

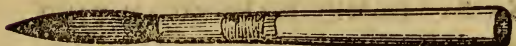
Assorted, G. D. C., 8/- gross.

No. 76.—CAMEL-HAIR, MIDDLE.

CROW.



DUCK.



GOOSE.



Crow, 8/-; Duck, 8/-; Goose, 10/-. Assorted, 8/- gross.

BRODIE & MIDDLETON, 79, LONG ACRE, LONDON.

No. 77.—CAMEL-HAIR WRITERS.

CROW.



DUCK.



GOOSE.



Crow, 8/- ; Duck, 8/- ; Goose, 10/-. Assorted, 8/- gross.

No. 78.—CAMEL-HAIR JAPANNERS' LONG WRITERS.

CROW.



DUCK.



GOOSE.



Crow, 8/- ; Duck, 8/- ; Goose, 10/-. Assorted, 8/-.

No. 79.—CAMEL-HAIR SWAN PENCILS.



Middle, 15/- ; Large, 24/-.

No. 80.—CAMEL-HAIR SWAN TINS.



24/- gross.

No. 81.—CAMEL-HAIR LINERS, OR STRIPERS.

FINE.



CROW.



DUCK.



GOOSE.



LARGE SWAN.



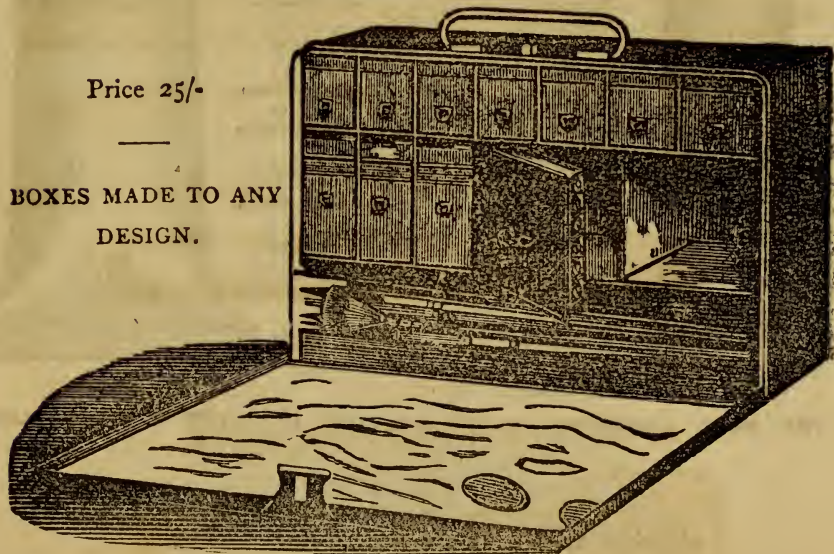
Fine, 8/-; Crow, 8/-; Duck, 8/-; Goose, 10/-; Swan, 24/-;
Middle Swan, 36/-; Large Swan, 48/- gross.

No. 82.—WRITERS' BOXES, &c., &c.

*Boxes for Sign Writers, Glass Embossers, Decorators, Missal Painters,
Gliders, &c.,*

Price 25/-

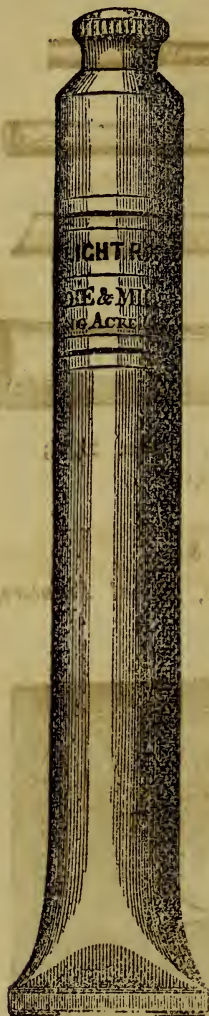
BOXES MADE TO ANY
DESIGN.



*Containing Boxes with Lids, for Colors, &c.; Screw Bottles, for Varnishes, Oils,
&c.; Spaces for Gold Leaf Brushes, Tube Colors, and Palette.*

OIL COLORS,

FINELY GROUND BY MACHINERY. IN PATENT COLLAPSIBLE TUBES



SINGLE.

Single, 3d.
Double Size, 6d.
Larger, 9d. & 1s.
Yellow Ochre
Roman or Golden Ochre
Brown Ochre
Raw Sienna
Burnt „
Prussian Blue
Antwerp „
Indigo „
Permanent Blue
Indian Red
Light „
Venetian Red
Bone Brown
Cappah „
Vandyke „
Pale Naples Yellow
Deep „
Extra Deep Naples Yellow
Patent Yellow
Chromes, Nos. 1, 2, 3, 4
Raw Umber
Burnt „
Sacrum, or Dryers
Mineral Green
Mummy
Bitumen
Asphaltum
Dutch Pink
Brown „
Italian „
Neutral Tint
Red Lead
Cologne Earth
Yellow Lake
Purple „
Indian „
Lake
Ivory Black
Lamp „
Blue „
Terra vert
Verdigris
Emerald Green
White
Cassell Earth

5d. each.

Crimson Lake
Scarlet „
Vermilion
Sap Green

6d. each.

Royal Yellow
Cerulean (blue)
French Ultramarine
Green Lake

„ No. 1
„ No. 2
„ No. 3
„ No. 4

8d. each.

Oxide of Chromium
Mars Yellow
Strontian Yellow
Indian
Gamboge „

9d. each.

Cobalt
Scarlet Vermillion

10d. each.

Madder Brown
Mars Orange

1s. each.

Lemon Yellow
Pink Madder
Madder Lake
Malachite Green
Rose Madder
Pale Ultramarine
Ash

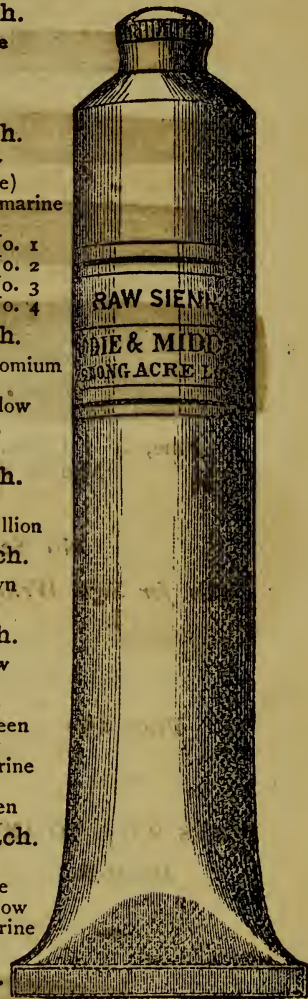
Veronese Green

1s. 6d. each.

Carmine
Violet Carmine
Cadmium Yellow
Deep Ultramarine
Ash

2s. 6d. each.

Purple Mad-
der



DOUBLE

THE MORE EXPENSIVE COLORS ARE PUT IN TUBES 2 INCHES LONG.

WHITE.

6d. 8d. 1s. 2s. 6d. 4s. 6d. each.
Double. Treble. Quadruple. 1-lb. 2-lb.

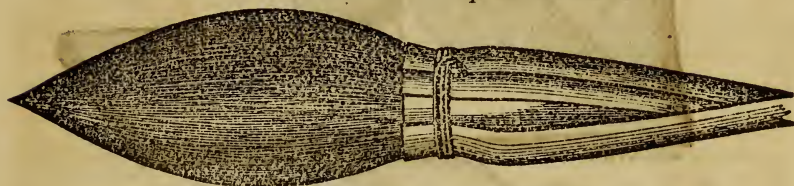
MYGULPH (MASTIC).

Single 3½d. | Double 7d.

GILDERS' BRUSHES, &c.

No. 83.—GILDERS' DABBERS OR MOPS IN QUILLS.

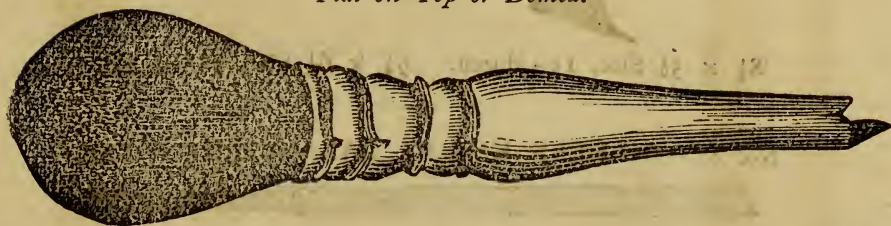
Wire-bound. Flat on Top or Domed.



1	2	3	4	5	6	Quill.
1/6	2/6	3/6	5/-	7/-	8/-	dozen.

No. 84.—GILDERS' MOPS ON HANDLES.

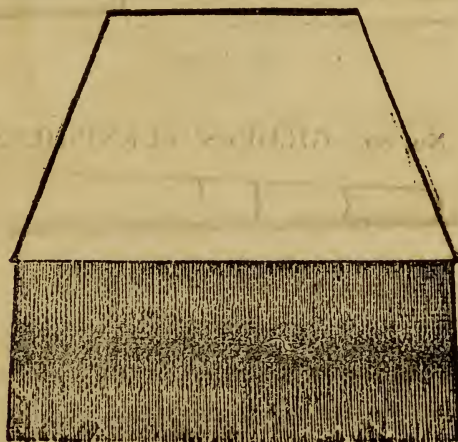
Flat on Top or Domed.



No.	3/6	4/-	6/-	7/-	8/-	9/-	10/-	12/-	14/-	18/-	21/-	24/- doz.
	2	3	4	5	6	7	8	9	10	11	12	

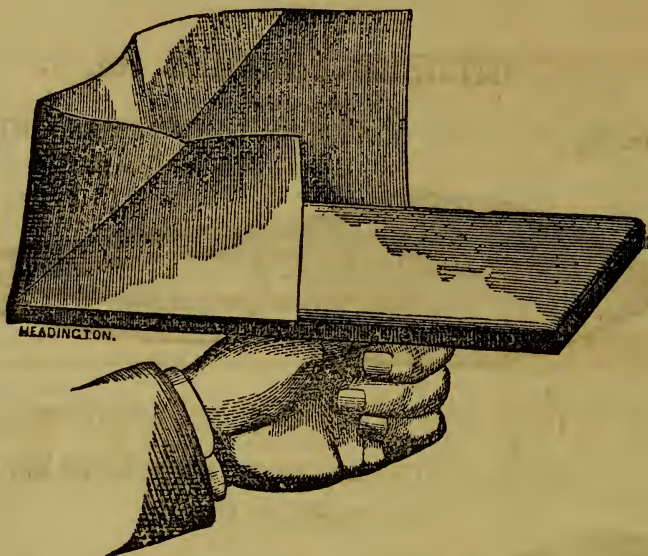
No. 85.—GILDERS' TIPS.

THREE DIFFERENT LENGTHS OF HAIR.



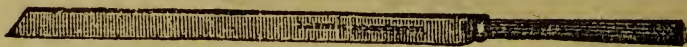
1 inch, 1½ inch, 2 inches long, and 4 inches wide—2/6 dozen.

No. 86.—GILDERS' CUSHIONS.



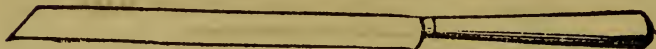
$8\frac{1}{2} \times 5\frac{1}{2}$ Size, 15/- dozen. $9\frac{1}{2} \times 6\frac{1}{2}$ Size, 18/- dozen.

No. 87.—GILDERS' KNIVES, BALANCE HANDLES.



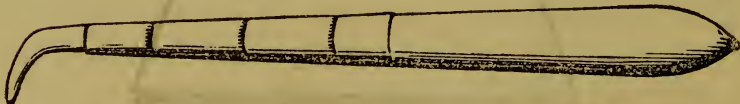
12/- dozen.

No. 88.—GILDERS' KNIVES.



10/- dozen.

No. 89.—GILDERS' BURNISHERS.



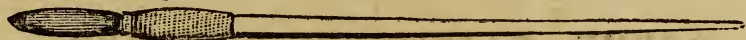
Agate, 2/- each ; Flint, 2/6 each.

No. 90.—LONG HANDLE BURNISHER,

FOR BOOK BINDERS, &c.

2/6, 3/-, 3/6, 4/-, 4/6, and 5/- each.

No. 91.—QUILLED TOOLS, OR SKEWING BRUSHES.

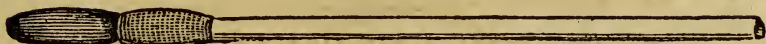


	2/-	2/6	3/-	3/6	4/6	5/6	7/-	8/-	9/-	10/-	12/- doz.
No. 1	2	3	4	5	6	7	8	9	10	12	

See also Sash Tools, Fig 40.

No. 92.—ROUND FRENCH TOOLS,

STRING BOUND.



	2/6	3/-	3/6	4/-	4/6	4/6	5/-	6/-	7/-	8/-	9/- doz.
No. 1	2	3	4	5	6	7	8	9	10	12	

No. 93.—OIL GOLD SIZE,

Thick and ready for use, prepared in Pots. See Fig 69.

3d., 4½d., 7½d., 1/-, 1/3, 2/-, and 2/6 each.

No. 94.—MATT AND BURNISH GOLD SIZE, 1/- per lb.

No. 95.—GILDERS' COTTON, 2/6 per lb.

No. 96.—PARCHMENT CUTTINGS, 1/- per lb.

No. 97.—GOLD LEAF,

See Fig 70.

Deep full size, 1/3 per book.

Ditto, pale, 1/2 „

No. 98.—CANING TUBES,

FOR CARRIAGE BUILDERS, &c.



Single, 1/6 each ; Double, 2/6 each.

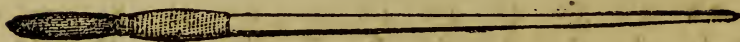
SCENE PAINTERS' BRUSHES.

No. 99.—LONG HAIR SASH TOOL.



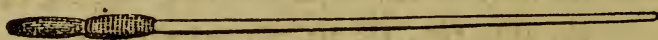
	8/-	10/-	13/-	16/-	18/-	20/-	24/-	30/-	34/-	39/-	48/-	doz.
No. 3	4	5	6	7	8	9	10	12	14	16		

No. 100.—LONG HAIR QUILLED TOOLS.



	2/6	3/-	3/6	4/-	5/-	6/-	7/-	8/-	9/-	10/-	11/-	12/-	doz.
No. 1	2	3	4	5	6	7	8	9	10	11	12		

No. 101.—SHORT HAIR QUILLED TOOLS.



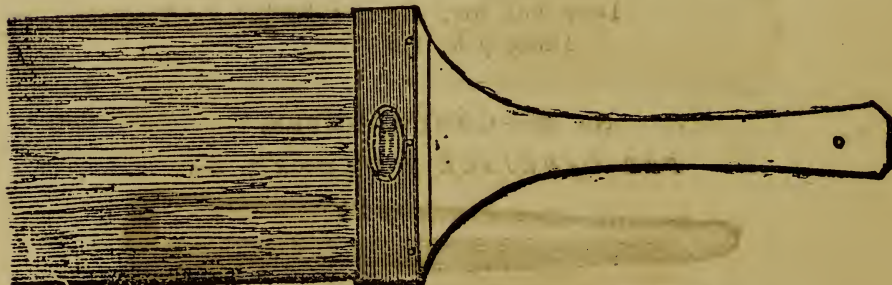
	2/-	2/6	3/-	3/6	4/6	5/6	7/-	8/-	9/-	10/-	11/-	12/-	doz.
No. 1	2	3	4	5	6	7	8	9	10	12	12		

No. 102.—ONE KNOT DISTEMPER.



7-inch Hair, 4/- and 4/6 each. 6-inch Hair, 3/-, 3/6, 4/- each.

No. 103.—FLAT COPPER BAND DISTEMPERS.



66/- dozen.

No. 104.—TWO KNOT GROUND DISTEMPERS.

(See Fig 39)

83-B9469

Messrs. BRODIE & MIDDLETON are prepared to supply Amateurs with Colors prepared for Scene Painting in small or large quantities.

	per lb.	s.	d.		per lb.	s.	d.
White Lead . . .		1	0	Maroon . . .		2	0
No. 1 Chrome . . .	"	1	0	Purple . . .	"	2	0
No. 2 Chrome . . .	"	1	0	Light Blue . . .	"	2	0
No. 3 Chrome . . .	"	1	0	Dark Blue . . .	"	3	6
Dutch Pink . . .	"	0	9	Ultramarine . . .	"	2	6
Brown Ochre . . .	"	0	8	Emerald Green . . .	"	2	6
Venetian Red . . .	"	0	8	Dark Green . . .	"	2	0
Orange Red . . .	"	1	0	Raw Sienna . . .	"	1	6
Persian Red . . .	"	1	9	Burnt Sienna . . .	"	1	6
Magenta . . .	"	1	9	Vandyke Brown . . .	"	1	6
Damp Lake . . .	"	4	0	Ivory Drop Black . . .	"	1	6
Carnation . . .	"	5	6				

Pans to hold $\frac{1}{2}$ -lb. of the above, 1d. each.

Theatrical Cannas, of all sizes, prepared for Scene Painting, 4d. per Superficial Square Foot.

No. 105.—MADONG, 2/6 per lb.

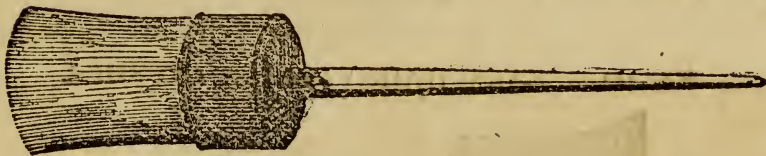
EVERY REQUISITE PROVIDED FOR SCENE PAINTERS

VARNISH BRUSHES AND TOOLS,

WARRANTED TO STAND.

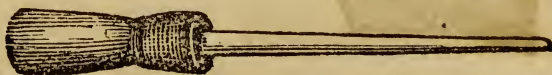
No. 106.—OVAL VARNISH BRUSHES,

TIN BOUND.



	15/-	18/-	24/-	27/-	30/-	36/-	42/-	48/-	doz.
No. 1	2	3	4	5	6	7	8		

No. 107.—CARRIAGE VARNISH BRUSHES.

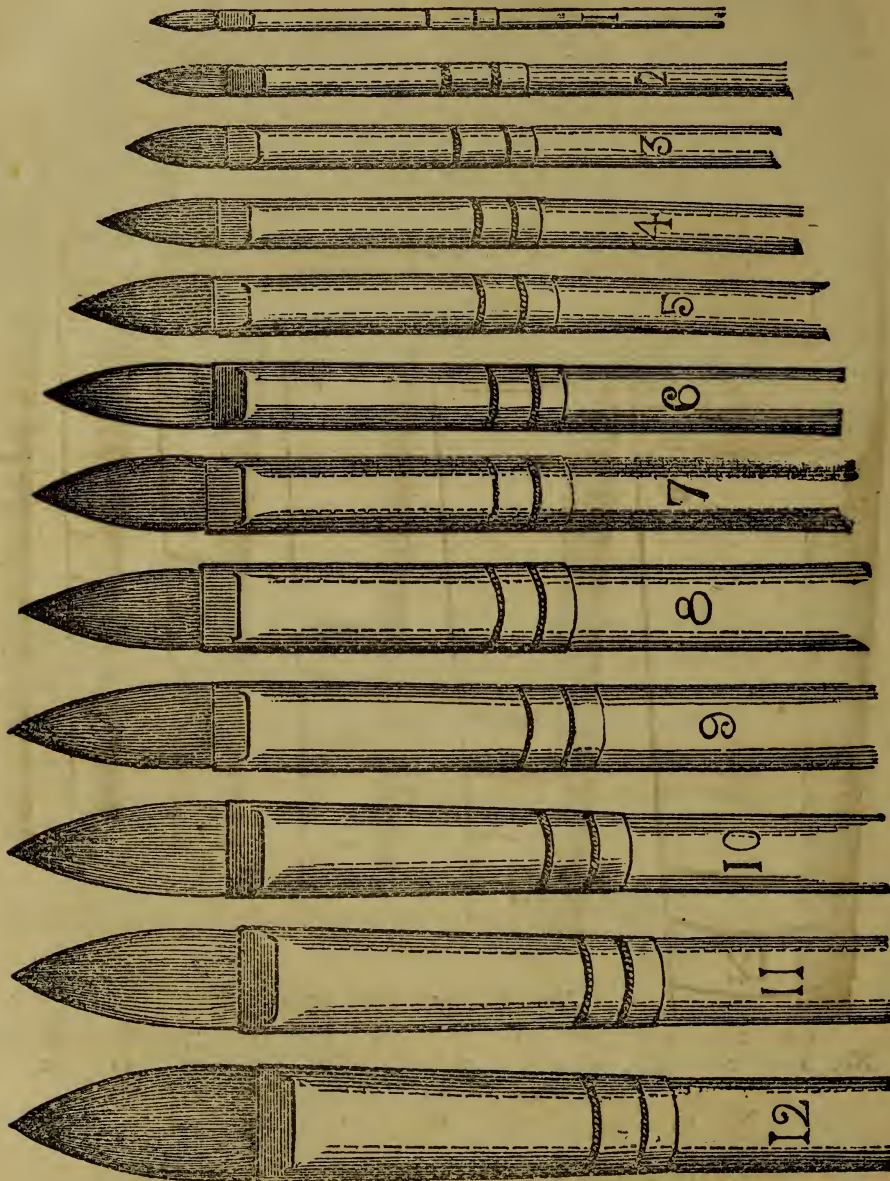


	15/-	18/-	24/-	27/-	30/-	36/-	42/-	48/-	doz.
No. 1	2	3	4	5	6	7	8		

IL. Lx 383 5161

BRODIE & MIDDLETON, 79, LONG ACRE, LONDON.

No. 114.—SABLE TOOLS, IN TIN, FLAT AND ROUND,
POLISHED CEDAR HANDLES, 12-INCH LONG.



Flat 4/6	5/-	6/-	7/-	8/-	9/-	12/-	16/-	20/-	24/-	30/-	36/-	doz
Round 4/6	5/-	6/-	7/-	8/-	9/-	16/-	20/-	22/-	33/-	42/-	51/-	„
No. 1	2	3	4	5	6	7	8	9	10	11	12	